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An Address
ON
INDUSTRIAL DISEASES
*PREVAILING AMONGST IRON AND STEEL WORKERS IN MIDDLESBROUGH.**

BY
J. WATKIN EDWARDS, M.B., C.M.,
MIDDLESBROUGH.

IN the *Supplement* to the Sixty-fifth Annual Report of the Registrar-General I find the following statement under the heading of "Iron and Steel Manufactures":

> The mortality in this industry at every stage of life is above the standard for "Occupied and Retired Males."
> At every stage of life the death-rate exceeds the average for "Metal Workers Generally"; in the main working period (25 to 65 years) the comparative mortality is 18 per cent. above the standard.

The number of persons engaged in these industries (including coke-burners) in England and Wales is, according to the last report, 135,000. In Middlesbrough are employed roughly 8,000, or about one-sixteenth of the whole.

An industrial disease has been defined as "one which is caused by and arises in the course of an industry."

The importance of the subject is at once evident when we consider that at least one-third of each day is spent by every man under conditions required by his occupation, and the total influence upon his life and health is not fully stated by that proportion, for

(*a*) The effects of overcrowding are more harmful during active work than when workers are at rest; and
(*b*) The evils of overcrowding are aggravated by:

(1) Exposure to changes of temperature;
(2) Inhalation of dust and irritating particles;
(3) Absorption of chemical poisons; and
(4) The effects of undue strain and exertion.

If the amount of air inspired while at rest is	= 1
The amount inspired when standing erect is	= 1.3
While walking at the rate of four miles per hour is	= 5

Every effort should be made in industrial towns towards making the lot of our workmen—both while at work and when off work—as perfect as possible. In this way we shall (1) increase the efficiency of labour, (2) promote contentment amongst the workers, and (3) increase the wealth of the nation.

In a general way it may be said that where work entails great effort, and the full natural workday of 240 foot-tons is much exceeded, an eight-hour day should be the maximum demanded. Full recreation is necessary. Sunday, above all things, should be retained as a day of rational rest of body and mind, in which music should probably play a large part.

Much has been done by employers in adoptiug means for (1) improving ventilation, (2) promoting cleanliness, including the provision of baths; and by employers and reformers in the formation of social and athletic clubs and winter gardens; but a good deal remains to be done by various agencies in various directions.

If we study the subject with special reference to Middlesbrough, we shall find several matters which seem to call for inquiry:

Death-rates in 1911 at all Ages.

	Males.	Females.
In county boroughs of North of England ...	19.2	16.6
In Middlesbrough	23.3	17.9

The chief industries of Middlesbrough are of so laborious a nature that no women are engaged in them. Of the men employed in the iron and steel trades in Middlesbrough 5,306 are between the ages of 25 and 55 years; the number at all the other age-periods together is 2,495.

The next largest employment is at the shipyards, where the number in the age-period 25 to 55 is 2,000, and at all other age-periods 1,200.

The death-rates in Middlesbrough of males between certain ages is compared with that of females. It is found that in males between 25 and 65 it is 14.2, and in females between the same ages it is 10.5, so that the number of men who die between those ages is about 40 per cent. above that of women.

The chief industries of Middlesbrough are: Iron and steel manufacture, etc., coke burning, manufacture of slag manure, girder work and bridge building, foundry work, engineering, shipbuilding, salt mining, dock work.

The diseases which caused the largest number of deaths in 1911 amongst males were:

Organic heart disease	61 deaths
Pulmonary tuberculosis	70 ,,
Bronchitis	85 ,,
Pneumonia	264 ,,

These figures do not, however, at all fully represent the amount of industrial disease prevailing in the town, for there are many minor complaints which do not appear as causes of death, being curable, but which give patients a good deal of pain and practitioners a great deal of trouble. These are cases that figure less upon the visiting list than upon the consulting-room list, and there they appear in daily profusion. A few of these complaints are dyspepsia, sciatica, lumbago, neuritis, etc., also a pitch disease causing hypertrophy and ulceration of the skin in various parts, which I have met with amongst those who work at chemical works.

The adverse influences which appear to be at work in causing these diseases are:

(1) Working at high temperatures.
(2) Long hours of work, fatigue; insufficient rest, sleep, and recreation.
(3) Working at night.
(4) Careless exposure to cold and wet.
(5) Intemperance.
(6) Inhalation of dust.
(7) Inhalation of poisonous gases, such as CO.
(8) Trauma.

1. ORGANIC HEART DISEASE.

This accounted for 61 deaths among males. Rheumatic fever caused only 2 deaths in 1911, and does not appear to prevail to a sufficient extent to be the causative agent in any great degree. I think, however, we can find other causes elsewhere.

(1) *Heat.*—A high temperature reduces the working capacity, and is injurious to health. In mines a temperature of 82° F. (wet bulb) raises the body temperature and increases markedly the pulse and respiration rates. Other factors co-operate with heat—namely, exposure to intense light and to strong currents of air.

(2) *Fatigue: long hours and too little rest* are bound to affect the health of the heart by not permitting heart nerve, heart ganglion, and heart muscle rest and repair. The night shift work is, in my opinion, especially harmful in this way, since it forbids rest at the time when Nature calls for sleep.

(3) *Intemperance* probably acts by depressing and paralysing the cardiac nerves, poisoning the protoplasm of heart muscle, and causing fatty degeneration.

There are no means of knowing what were the particular lesions present in these cases, but my own experience, while showing a proportion of obvious valvular lesions, reveals a large number of cases indefinite in character showing only hypertrophy or dilatation or signs of degeneration. Under rest, fresh air, dieting, and general treatment these cases respond very well, and the man can as a rule be allowed back to work without much loss of time.

2. PULMONARY TUBERCULOSIS.

This condition was the cause of 70 deaths amongst males. The causes which lie at the root of its prevalence are:

(*a*) *Inhalation of dust* at the works (where it is chiefly composed of inorganic particles), but especially in our streets and in dwellings and places where people congregate. The disease known as pneumonoconiosis is known to kill large numbers of Staffordshire potters, Cornish and Transvaal miners, and Sheffield grinders. Dust from any cause, especially that produced in the manufacture of manure from basic slag, causes bronchitis, asthma, chronic

*The address was delivered during Dr. Edwards's tenure of office as Chairman of the Cleveland Division of the British Medical Association, 1913-14.

cough and emphysema, and pneumonia, and, no doubt, predisposes the body to the attacks of the tubercle bacillus. As these dust diseases develop insidiously, the workmen engaged in such occupations should have their chests examined periodically, and any signs of commencing disease should be regarded as a disqualification for that particular kind of employment.

(*b*) *Improper food* and drink appear to be the second factor. The enormous increase in the consumption of animal food is a phenomenon of the present generation and the gain is problematical. To our forefathers meat was almost a stranger, except on one or two days a week, and there is no conclusive proof that they were any the worse on that account. Similarly the workers of France and Germany, the coolies of China, and the natives of Japan are able to perform prodigious tasks on a diet into which meat enters either not at all or in relatively small quantities. The popular notion that health and strength are to be found in direct proportion to the quantity of solid food put into the stomach, especially in the form of butcher's meat, washed down with copious draughts of beer, is probably quite wrong. The immediate results are dyspepsia and clogging of organs of excretion, and ultimate plethora, and sooner or later chronic disease. This applies to men especially. Women often make the opposite mistake of taking too little solid food, and induce imperfect nutrition from abuse of tea.

The question of drink is a difficulty at best, but especially is it so with respect to men who work in hot places and perspire freely. In advising patients on this point we are met with difficulties which arise from traditional beliefs, inherited craving, personal tastes, and custom and habit. It is the firm belief of many workmen that beer is necessary for their well-being, and that nothing can take its place. Some take it because they are genuinely fond of it, some because others do, and many are simply the victims of a vicious ancestry. It is, I believe, the daily experience of all physicians and surgeons alike that their work is hindered and hampered by the alcoholic habits of the nation. Illnesses are brought on directly by it, and diseases that should run a short course run a long one. Indulgence in alcohol reduces the number of white corpuscles and repair takes place very slowly. Delépine has shown that the lungs of alcoholics are liable not merely to catarrh but to haemorrhages. All occupations conducted in hot workplaces tend to intemperance. It seems to me that one of the greatest needs of the age is that of a drink —a thirst quencher—which, while supplying the bodily needs for fluid, will be sufficiently palatable, and will help to maintain industrial efficiency while the constitutional ill effects of alcohol are avoided.

Tea is largely drunk at the works, so is to some extent oatmeal water and herb beer. At present, for those of our patients who have to endure great heat, the best advice we can give is to drink in small quantities at a time cold weak tea or coffee, oatmeal water, or plain water. I would suggest in addition to these, when possible, home-made lemonade or some other fresh fruit drink. An old friend of mine, a physician of great experience, writes to me as follows:

> My reason for suggesting oatmeal water as the best drink for men working in hot temperatures is that it is a good thirst quencher and food owing to the nutritive constituents extracted from the oatmeal. The best method of preparing it is to pour boiling water on oatmeal, let it stand for three or four days in the vessel until acid fermentation is set up, then as the clear liquid is drunk add a little boiling water and oatmeal daily, leaving the dregs in order to set and keep up the acid fermentation. The acid is lactic, which acts favourably on digestive organs.

I have failed up to the present in making this drink very palatable.

(*c*) *Insufficient Breathing Space and Housing.*—I have no doubt whatever that the air space of many of the houses of working men is totally inadequate. The result is that large families are being brought up under conditions as regards housing in which they have little chance of either living healthy lives or of working regularly, or of living long. Small houses for a family of five or six, with a front living-room and a scullery, in neither of which is there room to move about freely, and two small bedrooms with one fireplace, will of themselves account for the spread of several diseases, and also for the careless lives led by both men and women. Many of the bedrooms have little more than enough room for a bed, and the actual available breathing space is often exceedingly scanty. The outlook upon life is bounded by these four walls, and is correspondingly gloomy. Young married people lose heart, hope, and ambition, and degenerate rapidly.

This condition of things in their homes accounts for some of the bad habits of the men which, in my opinion, predispose to disease. Men coming off the night shift, tired, cold, and hungry, knowing that they have only comfortless homes to go to, find themselves tempted to turn aside into the brilliantly lighted and cheerful looking places on the way. Here they are often led to stay, clad in damp working clothes, for hours, and when reaching home some time in the forenoon they fall asleep in front of the fire before a meal can be got ready for them. At 5 p.m. they have to go to work again, and they start for the works unchanged, tired, chilly, insufficiently nourished, and with tissues soaked with alcohol—in a condition eminently suitable for the attack of any bacillus of disease.

Carbon monoxide poisoning is apt to take place at many of the works during the charging of blast-furnaces in the course of manufacture of steel (especially by the Siemens process) and in the manufacture of coke. The gas from a blast-furnace contains from 4 to 12.4 per cent. of carbon dioxide and from 27 to 36 per cent. of carbon monoxide.

The symptoms produced are giddiness, headache, throbbing of the temples, ringing in the ears, and a sense of weariness; in severe cases convulsions and unconsciousness occur. When treated early and successfully, the following symptoms have been noticed later: Inability to swallow, muscular tremors, cough and blood-stained mucus, alteration and loss of speech, inco-ordination; ultimately nystagmus, nervous exaltation, and excitement. Some of these symptoms persist. Treatment consists in removing the patient to the open air, artificial respiration, oxygen, and the administration of a diffusible stimulant. It is important that the oxygen should be warmed by passing it through an indiarubber bag placed in hot water.

3. Bronchitis.

This condition caused 85 deaths among males and 49 among females; 47 of the males were over 25 years of age. Simple bronchial catarrh and sore throats are very common in Middlesbrough. I would place the following amongst the most common causes in men:

(*a*) Exposure to heat and sudden changes of temperature.
(*b*) Exposure to dust while at work.
(*c*) Night work.
(*d*) Careless exposure to cold winds whilst overheated at work.
(*e*) Carbon monoxide poisoning.

There is nothing new to say regarding its treatment save that where it persists the chest should be carefully examined for emphysema and phthisis. If either of these conditions be present a cessation of work or change of employment should be recommended.

4. Pneumonia.

Pneumonia caused 264 deaths amongst males in 1911, and 202 in 1912.

If we take the main working period of life (25 to 65 years of age), we find the following comparative death-rates in 1911:

In county boroughs of the North	1.6 per 1,000
In a town such as Sheffield	1.2 per 1,000
In Middlesbrough amongst females... ...	0.9 per 1,000
In Middlesbrough amongst males	3.4 per 1,000

The death-rate from pneumonia in Middlesbrough is, therefore, between two and three times higher than that in the county boroughs of the North, in Sheffield, and in the country generally amongst males between the ages of 25 and 65 years, while it is between three and four times higher than that among females in Middlesbrough.

Pneumonia has been called with a great deal of truth "the friend of the aged," inasmuch as through an illness, short, sharp, and not always painful, it enables the old to escape those "cold gradations of decay" which often make the passing to the tomb so painful and wearisome. But in 1911 in Middlesbrough, only 33 who died from this disease were over 65 years of age, while 83 were between 25 and 65 years of age. I would suggest that here it is, and has

been for many years, "the terror of the middle-aged." Males appear to be a little more susceptible than females generally, but in our town it occurs in the large proportion of nearly four males to one female. It appears to be more common in cities, and natives appear to be more susceptible than newcomers. This, I believe, to be true of Middlesbrough also. I have no doubt whatever that it prevails to a much greater extent among working men and the "casual" class than among business men or the leisured classes. The highest incidence is said to occur in winter and spring, but in Middlesbrough more appears to depend upon the state of the atmosphere, and I have thought from my own observation that a dry season is more favourable to attacks of pneumonia than a wet.

I have not found figures dealing with the factor of occupation either in respect to Middlesbrough or any other industrial district, but I am convinced that in Middlesbrough at any rate men engaged in iron and steel manufacture are much more liable to the disease than others. I have endeavoured to glean information in this connexion from the statistics for 1912 kindly supplied to me by Dr. Dingle. It is not possible to be exact, but approximately it may be said that of the total number of deaths between 25 and 65 years of age a little under one-fourth were females, about one-third were men outside ironworks, and almost exactly one-half were men employed at works.

I have already pointed out, however, that more than twice the number of men between the ages of 25 and 55 are engaged in those trades than there are at all other age-periods put together—5,306 to 2,495. With respect to occupational causes I would like to emphasize the following:

(*a*) Working in high temperatures with sudden exposure to cold, strong currents of air, and to powerful blasts of fiery and suffocating gases. Chilly air besets every form of half-open shed within which there is high temperature.
(*b*) Inhalation of dust of various kinds. This is specially true of the dust given off in the manufacture of slag manure.
(*c*) Injuries of any kind, but especially in the neighbourhood of the chest.
(*d*) Excessive fatigue, especially after night work.
(*e*) Careless habits after leaving work.
(*f*) Intemperance in food and drink.

Prophylaxis.

In the majority of cases the disease is conveyed by auto-infection. A condition of lowered resistance, due to one or more of the above-mentioned causes, furnishes a state of ill health favourable to the growth of an organism either already present in the mouth or throat of the patient or inhaled with dust or bad air. Patients, therefore, who have suffered from pneumonia (as well as those who have not) should exercise the greatest care in keeping the teeth, mouth, and throat in a healthy condition. Oral sepsis should receive energetic treatment; bad teeth should either be removed or filled; enlarged and unhealthy tonsils and adenoids should be removed; indigestion and constipation corrected.

The sputum should be carefully destroyed as soon as possible. For this purpose the patient should expectorate into squares of paper, or into small cardboard receptacles containing a layer of common salt or other suitable disinfectant, and the whole destroyed at frequent intervals by fire. Every reasonable care should be taken to prevent the patient coughing into the faces of the attendants, or on to the bedclothes, or upon the floor; such accidents frequently happen, especially in the case of semi-conscious patients; the infected spots should be scrupulously cleansed with turpentine or spirit, and the clothing of the nurses and of those in attendance should be protected by overalls. The rooms in which pneumonia patients have been treated should be thoroughly disinfected, and I am glad to observe that this is now undertaken by the municipality. In Middlesbrough we find a very fatal type of pneumonia, accounting for one-fifth of all deaths in 1911.

Treatment.

In regard to treatment, I may be allowed to make a few observations, fully realizing, however, that each practitioner has his own way of treating the disease, and that each man is successful in his treatment.

(*a*) *General Management.*—The patient should be placed in a warm room which admits a large amount of sunlight and fresh air without draughts; he should not be burdened with bedclothes, but it is important that the lower limbs should be well covered and tucked in with blankets (and rubber or paper sheet); poultices should be discouraged as far as possible; a cotton-wool jacket or sheet may be applied to the chest in such a way as to permit of examination and daily sponging of the skin with the least possible disturbance to the patient. I think rubbing the chest walls with camphorated oil promotes the local circulation, relieves pain, and comforts the patient. The mouth may be kept clean by frequent drops of plain or lemon water and glycerine and lemon juice.

Antitoxin treatment with either serum or vaccine has not been very successful so far. I have used the vaccine in a few cases only; the patients did not die.

(*b*) *Diet.*—For the first three days I think little more is necessary than water, and I allow plenty of water, plain lemonade, or weak tea, six to eight glasses in twenty-four hours. It is difficult to persuade the patient's friends that this is right, and they want to be giving milk and soda every few minutes, with quantities of beef-tea and whisky between times. After three days we should try hot milk and hot beef-tea every alternate three hours, but not oftener. Carbohydrates may be given as milk sugar in the milk or ordinary sugar in the lemonade.

(*c*) *Bowels, Skin, and Kidneys.*—An initial dose of calomel is very useful, and may be repeated with or without a saline aperient occasionally when necessary. In children a small alterative dose every six or eight hours may be given. Meteorism should be treated by preventing constipation, restricting the diet, and giving plenty of water. It is very important to get the skin and kidneys to act freely. I give large doses of ammonium acetate or ammonium citrate at the outset.

(*d*) *Hydrotherapy.*—For high fever, constant tepid sponging of accessible parts of body.

(*e*) *Pain.*—I have found small doses of aconite and antimony at frequent intervals useful; also Dover's powder, grey powder, and quinine in powder or capsule, together with a good diaphoretic, very useful in many cases. In some cases leeches or cupping.

(*f*) *In toxaemia* more water should be given and means used to promote diaphoresis and diuresis; constant sponging; calomel followed by a saline and alcohol (as whisky or brandy) with the milk and bovril every three hours in doses of one teaspoonful to a tablespoonful or more if necessary. I have lately tried in alcoholic cases a mixture of potassium iodide and creosote with good results, and I think this mixture deserves a further trial in suitable cases.

(*g*) *Failure of Circulation.*—More fresh warm air; more sunlight, and a mixture of ammonium carbonate, liq. strychninae with or without tincture of digitalis.

(*h*) *Dyspnoea.*—I have found oxygen useful in some cases; it would possibly act better if it were used warm.

(*i*) *Sleeplessness.*—I do not think that any of the modern soporifics are very useful. I think we should trust rather to general measures, wise nursing, quietness, coaxing, and a dose of morphine with or without atropine at bedtime, if necessary. The patient should not be disturbed at all during the night, not even for nourishment, once he has been made comfortable.

HEAD INJURIES IN WAR.

BY

AUGUSTUS W. ADDINSELL, M.B., C.M.EDIN., M.R.C.P.LOND.; CAPTAIN R.A.M.C.

IT seems probable that the experience of this war will confirm the principle that no injury of the head is too slight to make light of or too severe to despair of.

The treatment of wounds of the head must always be a matter both of anxiety and importance. This has been intensified in certain aspects by the appearance of an article in the BRITISH MEDICAL JOURNAL of February 19th by Colonel Gray, C.B. No apology, therefore, is needed for the consideration of a subject of such vital moment.

The interest that this article has aroused lies not in the fact that we have been taught anything new, but that the

doctrines inculcated are liable to be accepted by many junior officers, having very little experience to guide them, as the authoritative utterance—the "last word"—on head surgery.

We are told that "practically always" depressed fracture of the inner table is accompanied by "a cone-shaped pulping of the underlying brain," which is described as "a mixture of useless brain matter and blood which acts as an immediate source of irritation to the surrounding brain," and therefore the "apparently wounded dura" should be opened. If this useless brain matter does not immediately come forth, a pair of forceps is inserted to aid its exit.

Dr. Buzzard has very pertinently asked how this pulping is to be recognized before the dura is opened, and what evidence there is that softened brain tissue is a source of irritation.

In those cases in which I have removed pieces of depressed bone and foreign bodies, and the dura has been intact, I have not opened it, and I have refrained for the following reasons:

1. There is no direct evidence that the brain underlying the depressed bone is "pulped and useless beyond recovery."
2. If the underlying brain be damaged there is much less risk of it becoming infected with a dura intact than with a dura incised, and the process of repair has a far greater chance of success than if it be interfered with by a pair of forceps or a finger.
3. If there be evidence of intracranial pressure, lumbar puncture is easily performed and may easily be repeated.
4. The scar that is formed as a result of the healing process is probably less likely to bring about serious remote consequences, such as epilepsy, if the dura be not involved.

Perhaps the time is yet too short, but it would be of interest if some indication could be given us as to what is happening to those patients who have been operated on, and are being kept under observation in England; for, after all, it is the remote result that is of chief importance.

Here at the base our immediate concern is with the septic wound, the fractured skull, or with the localization of the foreign body in the brain. But our interest in these problems must not entirely obliterate our view of the patient's future.

During the last eight months thirty-seven cases of injury to the head have come under my personal observation, and I propose to limit my comments entirely to my own experience, because I believe that the recording of individual methods is the most satisfactory way to arrive at the best line of treatment. This contribution, therefore, may be regarded as a pebble thrown upon a heap. But each pebble has its place.

The plan usually adopted is to let the patient have complete rest for three or four days, unless the symptoms be very urgent calling for immediate interference.

I believe this rest and quiet to be great value. The prolonged exposure and work of the trenches, or the charge; the shock of the injury; the unavoidable but frequent moves until the patient reaches the base, must all tend to bring about a condition of exhaustion and a longing for rest in a comfortable bed.

During the first forty-eight hours much may be learnt. Symptoms of shock or concussion, or of pressure due to oedema from cerebral disturbance, may disappear, or show signs of improving. On the other hand, local paralysis, at first slight, may deepen. Evidence of cerebral irritation may manifest itself. Symptoms and signs, at first vague, may become definite.

Subsequent action greatly depends upon this period of inactivity. There is time to deliberate and decide. No operation is done "as a matter of course."

My present attitude, therefore, is to be content to follow the policy which has been found to produce the least unsatisfactory results, and that is to avoid surgical interference unless it be urgently and insistently called for.

I pass on to the consideration of a group of cases in which the disappearance of symptoms after operation has been so complete and immediate that one feels justified in attributing a large share of the credit for recovery to the operation.

I realize full well that concussion may play an important part in the early symptoms of these head injuries, and that paralysis and other symptoms may disappear without any operation, but in a number of cases that have come under my own observation the results have been so striking and so satisfactory that one feels encouraged to continue one's present practice.

Perhaps a brief description will best illustrate the type of case to which I refer.

Case I.

Private A. B., wounded by rifle bullet in the trenches on October 12th, 1915, was admitted to a general hospital on October 14th.

On admission he was dull and apathetic, and it was difficult to elicit any history. There was a long "gutter" wound of the scalp passing obliquely downwards from the vertex to the left temporal region. The right leg was a little spastic. There were no other focal symptoms.

The dullness and apathy improved greatly with rest in bed.

Early on the morning of October 20th, six days after admission, he had an epileptic fit. The first sign was a spasm of the right arm, with a cry. The right leg was next involved, and the spasms very quickly became general. When he recovered there was complete right-sided hemiplegia. A second seizure followed about two hours after he had recovered from the first.

Trephining.

The *x* rays did not show any depression of bone, but as the outer table was grooved it was decided to trephine. The operation was done three hours after the second seizure. A depressed fracture of the inner table was found lying over the Rolandic area. The fragments of bone were removed. The dura was intact and was left intact. A lumbar puncture was done. A drainage tube was placed in the lower angle of the flap and left there for twenty-four hours.

After-History.

The man had a slight seizure eight hours after the operation. On October 22nd—that is, forty-eight hours after leaving the theatre—there was a slight movement of his fingers; the next day he could move his hand; movements rapidly returned in the right arm and leg. The patient went to England on November 29th, able to walk well, and the grip of the right hand was indistinguishable from that of the left.

Case II.

Private T. A. W. was wounded on January 28th, 1916. He was admitted with four small punctured scalp wounds. There were no intracranial symptoms; the scalp wounds were cleaned and the patient kept in bed; the man seemed to be perfectly well. He was quite bright, and said he felt "in the pink." However, at 9 a.m. on February 3rd, five days after his admission, he was seized with an epileptic fit. The right side of his face was first affected, then the right arm, then the right leg, and then the convulsions became general. After recovering from the attack there was marked weakness of his right arm. A second and a third fit followed in quick succession, leaving his right arm and leg completely paralysed.

Trephining.

At 2 p.m.—five hours after his first seizure—he was trephined over the right arm area. The inner table was found to be fractured, with spicules of bone penetrating the dura. The bone was removed; the dura was not further opened; a flap of aponeurosis was reflected over the excised wound. A drainage tube was placed in the angle of the flap and retained there for forty-eight hours. Lumbar puncture was done.

After-History.

Two hours after the operation the man had another fit. During the next day—February 4th—he had no more fits; the temperature was normal, and the pulse 78.

On February 5th the right hand was weaker than the left, but movements had returned in both arm and leg.

On February 8th the grip of the right hand was almost equal to that of the left.

On February 18th it was noted that he had had no fits since February 4th, and that his general condition was excellent. He went to England a month afterwards apparently well.

I have cited these two cases because they illustrate several principles to which I attach importance.

Both these men lay in bed—one for six and the other for five days—with remarkably few signs or symptoms; one of them, indeed, had none at all, and in the other the dullness and apathy were improving rapidly and had almost disappeared, yet quite suddenly both had epileptiform seizures, leaving paralysis in their train. In both instances the damage to the outer surface of the skull was trivial, and the depressed inner table was not revealed by the *x* rays. Yet the consequences were severe.

The cases show that a wound of the skull, however slight, should not be regarded too lightly. They also go to show that the damage by the depressed bone to the underlying brain was irritative rather than destructive, and that even if a cone-shaped area of underlying brain had been beaten into a "mixture of useless brain matter and blood," its presence did not act as a source of irritation, because directly the bone was removed the symptoms disappeared. Another point they seem to show is that when definite focal symptoms arise whilst the case is under careful observation they should be dealt with promptly if they be within the reach of legitimate surgery.

It may be argued by the advocates of more heroic measures that had I operated at once the epilepsy would not have occurred. That may be true, but the negative examination of the *x* rays and the entire absence of symptoms justified an expectant attitude.

Again, it may be, and probably will be, urged that had I continued to leave them alone and had refrained altogether from interference, the epileptiform seizures would have ceased and the paralysis have disappeared. That also may be true, but it cannot be proved.

All that can be proved is that some cases of early epilepsy which have been left alone have got apparently well without operation.

On the other hand, one of the cases quoted above was rapidly passing into a condition of status epilepticus, and it seemed obvious that the first thing to do was to try and relieve the cortex of the source of irritation. An empty house is better than a bad tenant. The early onset of epilepsy is comparatively rare, and is probably due to cortical irritation, and if that be so, the sooner the cause of irritation be removed the better.

But I must not venture into the labyrinthine paths of neurological pathology. I content myself with stating that all of the patients who have developed epileptiform seizures and paralysis while they have been in hospital, and whom I have operated upon for depressed fragments of bone, have either recovered from their symptoms or improved, and in none have the symptoms returned prior to their transference to England.

What their subsequent history may be I cannot say, but there is one case that has been reported since his arrival in England which presents several features of such interest that I venture to record it.

CASE III.

The patient was struck by a piece of shell in the occipital region on February 10th, 1916. The wound was incised and cleaned under novocain at a clearing station at the front. The cranium was furrowed, there was loss of consciousness, and the man vomited and complained of headache. There was no obvious paralysis, but he was very drowsy and his mental condition was dazed.

On admission to a general hospital on February 13th, 1916, the patient was very drowsy; the pulse was 44. There was no paralysis, no optic neuritis, and no ocular signs, but he complained of severe headache. The *x* rays showed a fracture of the skull in the right occipital region with a foreign body in the left temporo-sphenoidal region.

The wound was kept clean, and healed rapidly. The pulse-rate varied between 44 and 54. No further symptoms developed, but right-sided hemianopsia was observed.

On March 6th, twenty-six days after the infliction of his wound, at 2 p.m. the patient complained, saying "My eyes feel funny"; at 2.20 p.m. the nurse noticed his right eyelid twitching; immediately afterwards his right leg was drawn up; this was followed by convulsions of the whole of the right side, which quickly became general, and when I saw him at 2.25 p.m. the patient was unconscious, and the convulsive movements were quieting down. When he had regained consciousness it was observed that the left pupil was rather more dilated than the right. The knee-jerks were present on both sides; Babinski's sign was absent; there was slight ankle-clonus on the right side. Mr. Verdon then reported right-sided hemianopsia; pupils active to light, no squint, no optic neuritis.

Captain McDonald reported that the *x* rays showed the presence of a foreign body in the left temporo-sphenoidal lobe in a line directly upwards from the mastoid process, and at a depth of 0.6 centimetre from the surface of the brain.

Trephining.

At the operation, which took place at 5 p.m. on that day, a needle was driven through the scalp, making a fine point on the bone, which corresponded with the surface marking on the scalp made by Captain McDonald. A flap was turned down, the point of a trephine was placed on the spot marked by the needle, a disc of bone was removed and brought into view the posterior branch of the middle meningeal artery. The dura was incised a little above this; a fine telephone probe struck the foreign body; this was removed, though from a slightly greater depth than had been estimated.

The dura was stitched up. A lumbar puncture was done.

After-History.

Forty-eight hours after the operation Mr. Verdon reported: Optic discs healthy. Full field of vision in each eye to hand test; can read large print with difficulty.

The wound healed by first intention, and the patient made an uninterrupted recovery. His pulse varied from 64 to 80, and his temperature remained normal.

I have recently (May 12th) seen this man in the Maida Vale Hospital. He continues well, has had no more fits, and his headaches have disappeared.

However apt one may be to attribute to the *propter* that which only belongs to the *post*, it is difficult to deprive the former of its share of credit in this instance. The prompt disappearance of all headache, though only a subjective phenomenon, was nevertheless an intense relief to the sufferer, and the immediate rise in pulse-rate from 44 to 68, together with the return within forty-eight hours of a complete field of vision and the non-return of any epileptiform seizures, would seem to point to the conclusion that the removal of the piece of metal from this man's brain had some direct relation to his improvement.

Mr. Verdon tells me that he can only account for the disappearance of the hemianopsia by the suggestion that the removal of the foreign body in some way relieved tension on the cortical centre for vision.

There is one other matter to which I should like briefly to refer, and that is the question of drainage. Personally I rarely use a drain inside the skull. If the damage to the skull and the dura be so extensive that the brain matter oozes out, there seems to be no need for one. This principle applies not only to those cases which are brought down to the base with brain matter exuding before any operation is attempted, but equally to a large number of cases in which the removal from the brain of pieces of bone and foreign matter is immediately followed by exudation of destroyed brain matter.

What has happened in this latter class of case? The driven-in bone or the missile, or both, have destroyed the brain matter in their course, the removal of this foreign material opens up a track along which the destroyed brain matter passes, along the line of least resistence, impelled by the intracranial pressure. A silver tube, or a perforated zinc tube or a solid rubber tube, have never appealed to me as suitable for putting inside the brain, so I rely, whenever the wound of the brain is not too deep, upon intracranial pressure for getting rid of destroyed tissue.

There are, however, a certain number of instances in which the wound of the brain is so deep as to give rise to grave risk of the destroyed and infected brain matter finding its way into the ventricles. In these cases drainage is necessary; for, as Sargent and Holmes point out, cerebral oedema and increased intracranial pressure are factors tending to bring together the walls of the track, and thus act as a block to the free discharge of the infected brain tissue. Still the greatest care must be exercised in using a solid drain, and it should never be inserted too deeply.

My attention has several times been drawn to the great difference in consistency of the brain matter in these cases of cerebral injury. In some the surrounding brain matter is firm and resistant and altogether different from that of the damaged area; whereas in others the surrounding brain is soft and yielding, differing very little in resistance from the damaged tissue in the region of the wound.

The danger of damaging uninjured brain matter with a solid drain tube seems to me to be very real, and I have seen more than one instance in which the solid drain has worked its way into normal brain tissue.

One other practical point is the matter of the incision of the scalp. I nearly always turn down a flap. In quite an appreciable number of scalp wounds caused by shrapnel the injury through the soft tissues is oblique, and the wound of the skull is not directly under the external opening in the scalp. The result is that if a linear incision be made for the purpose of examining the bone, the bone injury may easily be missed. This condition, in my experience, is never found in wounds by bullets of high

velocity, but I have seen quite a number of cases where small pieces of shell or shrapnel have pierced the scalp in an oblique direction, and the fracture to the skull has occurred at some distance from the wound of entrance in the scalp.

One of the last operations I did illustrated this point. The piece of metal lay on the dura, without having torn it, but in getting there it had pierced both outer and inner tables of the skull in the thickest part of the occipital region in an oblique direction, and was found fully an inch away from the entrance of the scalp wound.

A flap avoids all risk of missing a skull fracture, gives an ample field for operation, and the septic wound of entrance can be adequately dealt with.

In closing the wound I make no attempt to tie any arteries of the flap, relying upon accurate apposition and firm stitching.

If the medical and surgical literature of this war is to possess any value, it must, in my view, be based solely upon individual experience. There can be no such thing as a hard-and-fast rule binding our practice. If it were so, surgery would cease to be an art. It would become a trade.

The utterance of pious opinions, unsupported by careful observations, can have no place in these records of facts, the examination and sifting of which may be destined to prove of supreme importance to future generations of soldiers who fall wounded in the fight. Our views as to technique may change, time may modify our practice. but, whatever else may alter, the principle of applying to each case full deliberation and well-considered judgement should "stand like stone."

NOTES ON THE TREATMENT OF HERNIA CEREBRI.

BY

S. SMITH, M.B., B.S., CAPTAIN (TEMP.) R.A.M.C.

DURING eighteen months' experience at a base hospital in France, during which time between six and seven hundred cases of gunshot wound of the head have passed through my hands, one of the most difficult problems which have arisen has been the prevention, or where this has been impossible, the treatment, of hernia cerebri.

The life of the patient is in grave jeopardy as long as this serious complication exists, especially if it shows a tendency to progress, constituting as it does both a warning and a menace.

It warns us of increased and increasing intracranial pressure, and, unless a state of equilibrium be speedily established, the patient will die from compression, causing paralysis of his vital centres. The progressive protrusion of brain matter through a small cranial wound may also produce further or new functional disturbance, not only because the herniated brain is disintegrated, but because the fibres in its neighbourhood are displaced, stretched, and often ruptured. It is not, for instance, rare to find hemiplegia supervene where a hernia develops either in the frontal or post-parietal region.

A hernia, too, especially if large, acts as a direct menace, by reason of the tendency for it to become gravely infected, and for this infection to spread to the underlying brain substance, leading to a generalized cerebritis, or to the spread of infection into the lateral ventricle. The danger of this latter event is all the greater because often there is a diverticulum of the ventricle in the hernia.

Serious infection of the hernia is most likely to occur in those cases where it is strangulated, as so often happens when the bony opening through which it protrudes is too small, the familiar "button" hernia, with its attenuated and constricted pedicle, being thus produced; such strangulation of the protrusion is followed by softening and sloughing, and thus the facility for deep infection is increased.

It has seemed to me that the brain, perhaps because normally it is so effectually covered and protected by its bony envelope, evinces, more than any other tissue of the body, a tendency when exposed to become ulcerated and sloughy, and this should be given great weight when the question of operative measures comes to be considered.

1. *Limitation and Protection of Exposed Brain.*

It has been our constant endeavour, therefore, to limit as far as possible the amount of brain exposed, making wherever feasible the plastic floor, and draining by rubber tubes passed in at the angles of the flap, a procedure introduced and advocated by Lieutenant-Colonel Sargent, R.A.M.C.[1] The technique of this operation is simple, and in suitable cases it gives excellent results. The larger the dural defect, the larger is the extent of the exposed brain and the greater the risk of infection. Consequently, I consider it of importance, apart from the danger of opening up the highly susceptible subarachnoid space, that the dural opening already produced by the wound should not be enlarged.

Still more important is it not to incise the dura if it be found intact, as this procedure is accompanied by grave risk of infecting the damaged, but not septic, brain underneath, thus leading to the very condition of affairs favourable to the formation of a hernia that we are doing our utmost to prevent.

As a means of diminishing the cerebral exposure we have found suture of the edges of the scalp wound after excision of the edges of the original wound only possible in a relatively small proportion of our cases, the wound generally having been far too extensive and septic for the performance of such a desirable procedure. Moreover, where such a method of closure has seemed practicable, the tension necessarily produced would have made efficient drainage very difficult, and there is an obvious objection to a tight suture line lying pressed up against the exposed brain, which we are trying both to protect and to drain.

2. *Antisepsis and Drainage.*

It goes almost without saying that another eminently desirable factor in the prevention or limitation of hernia cerebri is the effective treatment of the ever prevalent sepsis, both by the use of efficient drainage with frequent dressings where necessary, and also by the use of antiseptic lotions.

After many experiments with various lotions, I have used latterly a mixture consisting of equal parts of carbolic lotion (1 in 20), hydrogen peroxide (10 vols.), and water, as suggested to me by Mr. Parry Morgan, M.B. (late Captain (temp.) R.A.M.C. The hydrogen peroxide is specially valuable by reason of its faculty of breaking up and facilitating the removal of sloughs, clots, and disintegrated brain matter that may have blocked up the lumen of the lateral rubber drains, and may so be interfering with the efficient drainage of the underlying brain. This lotion has also been found most useful in the treatment of those cases in which an exposed hernia cerebri already exists. It is very necessary that old dry dressings should be "wetted" off such a hernia and not torn away, for not only does a hernia from which a dressing has been roughly torn evince a tendency to troublesome haemorrhage, which is often difficult to stop, but frequently once the thin outer wall of the hernia is removed there is a marked tendency to the onset of rapid sepsis with the subsequent breaking down of the septic mass.

Before settling down to the routine use of the peroxide-carbolic mixture, I used at one time saline solutions of various strengths, even putting saline tablets rolled up in gauze in direct contact with the brain in certain cases; saline, however, was not very satisfactory, and had a marked tendency to render the brain in contact with it "boggy," with increase in the size of the hernia. Various spirit solutions—among them mercury biniodide in spirit, formalin, and even absolute alcohol—were also tried with a view to drying up the excrescence, but although in many cases the hernia itself dried up satisfactorily enough, the general hardening and fixing of its surface produced by the spirit did not allow the septic foci from bone fragments, etc., at any depth to come to the surface; and although the hernia looked clean and shrunken, the patient frequently died from meningitis or cerebritis extending from such bottled-up foci.

3. *Postural Treatment.*

It is important to make use of gravity in the treatment of hernia cerebri and also in its prevention, and with this end in view we always, when possible, sit our patients up

as soon as they are sufficiently recovered from the effects of the operation; this procedure is, unfortunately, impracticable in many cases, as, for instance, when the patient is unconscious or very restless, or where some such complication as a fractured femur exists. In those cases, however, in which it can be done, this manœuvre has a remarkable effect in limiting the hernia, and will even cause it to subside altogether in many cases. It is specially efficacious in herniae of the frontal region or near the vertex, where gravity has full play and the tendency for the brain is to fall away from the wound. It is also important that, by the free administration of morphine, heroin, or similar drug, the patient should be kept quiet and so prevented from bruising his hernia by knocking it against the head-rail—a by no means rare occurrence; with this end in view, too, it is well to keep the hernia, if protruding to any extent, surrounded by a sufficiently large "buffer" of wool to prevent injury.

4. *Lumbar Puncture.*

In spite of every care, however, hernia cerebri will always be met with in a certain number of cases, both following operation and also in those in which no operation has been performed. It is here that the *systematic* use of lumbar puncture is of the utmost value.

For many months past we have been treating hernia cerebri by repeated lumbar puncture, using the sitting posture as a valuable auxiliary. Although many cases so treated have died, our results on the whole have been more satisfactory than before these two simple and logical lines of treatment came into general use.

Increase in the intracranial pressure, which is the fundamental factor in the production of hernia cerebri, may be due to:

(*a*) An actual swelling of the brain substance itself, commonly due in the early stages to traumatic oedema cerebri. This may be succeeded at a later stage by that common and fatal sequel—spreading cerebritis. In these cases, where increase in intracranial pressure is due rather to increase in the actual volume of the brain itself, owing to the oedema and consequent swelling of the individual cells composing it, rather than merely to increased accumulation of cerebro-spinal fluid in the ventricles and subarachnoid spaces, lumbar puncture by itself appears to do little good. It is a desperate disease requiring a desperate remedy, and often a contralateral subtemporal decompression, combined with repeated lumbar puncture, are the only measures holding out any prospect of success; although there is some risk in conveying infection to the subarachnoid space, some cases thus treated have lived and gone home in a satisfactory condition who must otherwise inevitably have died from cerebral compression.

(*b*) Haemorrhage, either extra- or intra-cerebral, is rarely sufficient in cases that reach the base to give rise to symptoms; but secondary haemorrhage into the damaged brain, in or beneath the hernia, is not uncommon, especially in cases sent down to us too soon after operation. In these cases a patient, who appears to be progressing satisfactorily, will quite suddenly evince symptoms of increased intracranial pressure, and the accident is evidenced externally by a rapid and enormous increase in the size of the protrusion, from which dark blood and disintegrated brain escape in large quantity. This is specially liable to occur when infection by *B. perfringens* is present. Death is usually too sudden in these cases of secondary haemorrhage into the brain substance to allow of any operative measures.

(*c*) Some degree of meningitis will cause increase of fluid in the ventricles and subarachnoid space. It is, of course, this third factor in the production of increased intracranial pressure which can often be so effectually treated by repeated lumbar puncture.

Character of Cerebro-spinal Fluid.

The character of the fluid drawn off by lumbar puncture in these cases has been found to fall into one of the following groups:

1. Quite clear though under increased tension, containing no cells and showing no evidence of meningitis. This is probably the type of fluid associated with the early traumatic oedema.

2. Definitely turbid, containing many morphonuclear and mononuclear cells, often tinged with blood, and showing a stray staphylococcus, streptococcus, or degenerated *B. perfringens* in one or two cells amongst those examined. These I have labelled cases of reactive meningitis, and they are probably associated with a localized or generalized meningitis of low virulence.

3. Purulent, crowded with leucocytes, with many organisms in the field, staphylococci, streptococci, *B. coli* or *B. perfringens* growing on culture. *B. perfringens* is rarely met with as a primary infection of the meninges but is common as a terminal event, and is often superadded to a staphylococcal or streptococcal meningitis towards the end. The explanation appears to be that the *B. perfringens* (*B. welchii*) is of low "serophytic" power, and it is only when the patient's power of resistance has well nigh vanished that this organism is able to make any real headway.

4. Definitely blood stained, often presenting the appearance of almost pure blood. This is usually evidence of haemorrhage, commonly near the base, and indicates an unfavourable prognosis.

Both in Class 1 and in Class 2 we have had many successes with repeated lumbar puncture; and although, so far, we have not succeeded in saving a case in Class 3, we kept one patient with a virulent streptococcal meningitis alive for nearly a month.

Out of one series of twenty cases with varying degrees of hernia cerebri from which cerebro-spinal fluid has been drawn—

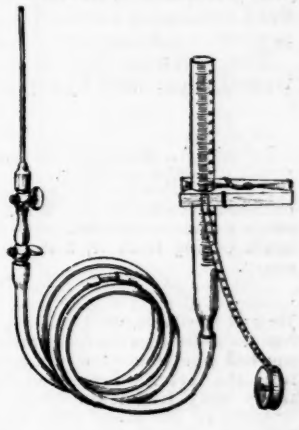
In 5 the fluid was clear (in two cases tinged with blood).
In 9 the fluid was turbid, containing many polymorphonuclear cells and a few stray pyogenic organisms.
In 4 the fluid was frankly purulent (staphylococcus 2 cases, streptococcus 2 cases).
In 2 the fluid was purulent though no organisms grew on culture.

Method of Employing Lumbar Puncture.

In every case, except where the patient is unconscious or dull, general anaesthesia, preferably chloroform, has been used. Our reasons for employing general anaesthesia for such an apparently trivial operation is that usually the patients, during the stage in which we see them, are very restless and extremely sensitive, often arching their backs violently even when touched with the hand, and, in our experience, local anaesthesia with novocain has not been sufficient to overcome this repugnance. Further, such violent straining naturally leads to the protrusion of more brain and the consequent destruction of more functional tissue. In some few cases in the past we found it possible to insert the needle under local anaesthesia at the first visit, but the patient violently resisted any subsequent tapping. It is fortunate in this respect that head cases do not resent the frequent lapses into oblivion necessitated by this procedure as do normal individuals.

Having inserted the needle, and before running off any of the fluid, we estimate the pressure of the cerebro-spinal fluid by means of the simple manometric apparatus described originally by Page and Cassidy.[2] Percy Sargent has also described its use in connexion with head injuries.[1]

The instrument consists simply of about 3 ft. of narrow rubber tubing, connected at one end to a narrow glass barrel funnel some 6 in. in length, and at the other to a small metal fitting with a tap, allowing it to be connected up with the special lumbar puncture needle provided with the apparatus, and which is also fitted with a tap. The tubing and about half way up the glass funnel are now filled with warm normal sterilized saline, and the apparatus fitted on to the needle.



When connected up it will be found—if the needle connect with the intrathecal canal and is not blocked by a plug, as of fibrin—that the saline in the glass funnel will undergo small regular oscillations of an amplitude of from 2 to

5 mm. The glass funnel is then held vertically over the point where the needle enters the patient's back, and moved up and down in a vertical plane until the upper level of the saline column is stationary, save for the small oscillations already referred to. A measurement is then taken with a centimetre scale from the point where the needle enters the back to the upper level of the fluid. Normally, we have found that the column of saline thus supported varies from 15 to 25 cm. The amount of fluid to be withdrawn will roughly depend on this reading, and varies from 4 to 8 fluid drachms, according to the initial pressure recorded. Even where the initial pressure is very high (in one of our cases it amounted to 108.5 cm.) it is not necessary to remove more than from 4 to 8 fluid drachms, as the pressure recorded after the removal of this quantity will rarely register much above the normal. It is important, too, that the fluid be withdrawn slowly, almost drop by drop, as otherwise the hernia, with the too sudden relief of pressure, may sink back through the bony opening into the brain, leaving a deep cavity where before there was a large hernia. This is dangerous, for adhesions may be broken down and a septic meningitis lighted up. Before we realized the danger of this phenomenon, one of our patients, who until then had progressed favourably, suddenly developed fatal meningitis soon after his hernia had involuted in the manner above described—as the result of lumbar puncture where too great a quantity of fluid was removed at too rapid a rate. After removal of the fluid into a sterile test tube for subsequent examination the pressure is again taken and recorded; if still too high, a small amount more fluid may be removed.

The intervals allowed to elapse, between which repetitions of the puncture are necessary, depend on many factors, some of which will now be discussed.

If after the first puncture the hernia shows no sign of decreasing, and compression symptoms do not decrease, it has generally been our practice to repeat the tapping on alternate days, until the pressure as shown by the manometer readings is brought down to within reasonable limits; in a few cases of high pressure with rapidly increasing hernia and progressive signs of compression we have repeated the operation daily, though this, in my experience, is rarely necessary, the performance of the tapping on alternate days giving equally good results. If the fluid is clear, thus showing that there is, in all probability, no inflammatory process at work, it is permissible to wait longer before repeating than if it is turbid, crowded with leucocytes, and, maybe, giving growths of organisms on culture. One cannot assume, however, that clear cerebro-spinal fluid drawn off by lumbar puncture necessarily means absence of meningitis, for more than one of our patients have died in whom lumbar puncture gave clear fluid until the last, though subsequent autopsy revealed extensive suppurative meningitis.

In this connexion it is interesting to note that during the early days of the war I had a case (not a wound of the head) die from what autopsy revealed to be well-marked meningococcal meningitis, with much pus both at the base of the brain and also along the cord, which, when cultured, gave a pure growth of meningococci. Lumbar puncture was performed on the day preceding death, and gave clear fluid, containing a few stray cells, but no organisms visible in films or growing on culture.

The following two cases are illustrative of several treated in our ward by repeated lumbar puncture:

Case I.

Private A., admitted November 22nd, 1915, suffering from gunshot wound of vertex.

Wounds.—Entry: Dirty wound, ¾ in. in length, stretching obliquely across vertex, 6 in. behind nasion. *Exit:* Larger, more explosive wound, with much septic and disintegrated brain oozing from it, 2 in. to left and 1 in. behind wound of entry.

Condition on Admission.—Dull, difficult to examine, exhibiting weakness of right side of face. His tongue protruded to right. He had paralysis, with slight general rigidity of right arm and hand. Both legs were paralysed, and in that condition of marked rigid extension and adductor spasm typical of wounds near the vertex. Trephined November 23rd; usual flap made, many bony fragments driven into brain were removed, the wounds in his scalp were joined and excised and the flap replaced. The flap was drained by two small rubber tubes, one passed in at each lateral angle of the flap. The scalp was in too septic a condition to allow of the plastic floor being made.

Manometer Readings.

Date.	Clinical Condition at the Time of Lumbar Puncture.	Initial Pressure shown by Manometer.	Quantity and Character of Fluid Removed.	Pressure after Removal of Fluid.
1915. Nov. 29	Slight hernial protrusion through wound	72 cm.	ʒ vj of slightly turbid fluid removed. No organism. Fair number of polynuclear and mononuclear cells. Sterile on culture	30 cm.
Nov. 30	Slightly better. Protrusion the same	21 cm.	ʒ vj of slightly blood-stained and turbid fluid, presenting same characters as before	11.5 cm.
Dec. 2	More hernial protrusion	24 cm.	ʒ v of slightly turbid fluid still containing many cells. Sterile on culture	12.5 cm.
Dec. 3	More protrusion	53 cm.	(No note made.) Fluid removed slightly turbid. Many cells	26 cm.
Dec. 5	Hernia has receded			
Dec. 6	Hernia again protruding	50 cm.	ʒ vj of slightly blood-stained and turbid fluid removed. No cells apart from blood	17.5 cm.
Dec. 7	Hernia slightly larger	50.5 cm.	ʒ vj of quite clear fluid removed. Contained no cells	20 cm.
Dec. 13	Hernia, which had receded after last tapping, again increasing	36.5 cm.	ʒ vj of clear fluid removed	13.5 cm.

No further tapping was required. Patient sent home December 27th, 1915, with hernia flush with skull opening. General condition greatly improved, although his paralysis persisted.

Case II.

Patient B. was admitted on July 13th, 1915, with a history of having been wounded the day previously.

Wound.—Septic gutter wound 3 in. in length of right parietal region. Much septic brain substance extruded. Patient was trephined on July 14th. There was much fracturing, with comminution of the skull under the wound. A deep track led from the wound deeply into the brain substance. This contained many indriven bone fragments, which were removed. The cavity was then washed out and the track drained by one of Sargent's perforated metal tubes 2 in. in length.

Manometer Readings.

Date.	Clinical Condition and Condition of Wound.	Initial Pressure.	Quantity and Character of Fluid.	Pressure after Removal of Fluid.
1915. July 17	Wound clean Some protrusion around tube. Patient restless. Temperature 103.8° F.			
July 27	Hernia increasing, tube pushed out by pressure of brain. Pulse remains rapid. Temperature down			
Aug. 2	Very drowsy. Hernia larger and tense	47 cm.	Fluid clear, ʒ vij were removed. Contained many polymorphonuclear cells. No organism present	23.4 cm.
Aug. 4	Rigor, followed by cramps in legs after last tapping. Hernia slightly larger. Some tendency for it to break down	41 cm.	ʒ v of clear fluid removed No cells or organism present	17 cm.
Aug. 6	Condition slightly better	42 cm.	ʒ vij of clear fluid removed	12 cm.
Aug. 8	Slightly more protrusion. General condition improved	19 cm.	ʒ iv of clear fluid removed	7.5 cm.
Aug. 14	Hernia breaking down, and slightly larger	27.5 cm.	ʒ vj of clear straw-coloured fluid removed	11.5 cm.
Aug. 18	Hernia much smaller. Temperature and pulse normal. General condition much improved. Sent to England			

Both of these two cases were of a type with progressive hernia cerebri, which would, in our experience, have died

if their increased intracranial pressure had remained unrelieved.

The following case is interesting as showing how a patient may drift on from week to week with a streptococcal meningitis.

CASE III.

Private M. was admitted on August 8th, 1915, with a history of having been wounded seven days previously by shell fragments.

Wound.—A dirty gutter wound 2 in. in length immediately behind pinna of left ear.

X-ray examination showed a bone defect of considerable extent under wound, with indriven pieces of bone and many shell fragments lying in the brain substance at varying distances from the wound of entry. The patient was trephined on August 9th, 1915. Fragments of bone were removed from the brain substance underlying the wound. No attempt was made to reach the shell fragments; wound too septic to allow of its being floored in.

Manometer Readings.

Date.	Clinical Condition and Condition of Wound.	Initial Pressure.	Quantity and Character of Fluid Removed.	Pressure after Removal of Fluid.
1915.				
Aug. 14	Complaining of intense headache. Some hernial protrusion through wound	46.5 cm.	3 vj of turbid fluid removed, containing many leucocytes. Streptococci in pure culture	22 cm.
Aug. 15	Still has intense headache. Temperature high	66 5 cm.	3 x of turbid fluid mixed with blood removed	Not taken.
Aug. 17	High, irregular temperature. Hernia increasing. Headache severe	58 cm.	3 (?) removed. Fluid straw - coloured, slightly turbid. It contained many cells. A few colonies of streptococci on culture	
Aug. 19	—	51 cm.	3 ij (all that could be got to run) of turbid fluid, containing many fibrinous strands, removed. Fluid contained many leucocytes	
Aug. 21	Patient no worse	44.5 cm.	3 v of almost clear straw-coloured fluid removed. Very few colonies of streptococci on culture	
Aug. 26	Semi - conscious. Increasing hernia cerebri	108.5 cm.	3 v removed. Fluid opaque and straw-coloured. It contained a few flakes of dense white fibrinous material	16.5 cm.
Sept. 1	Semi - conscious. More hernia cerebri	65 cm.	3 viij of turbid fluid containing many white shreds	
Sept. 5	Patient unconscious, temperature high, pulse weak. Patient died			

Our comment on this case would be that it is only rarely that a case of streptococcal meningitis lives as long as three weeks. His condition appeared to improve steadily up to August 21st, 1915, when the fluid, which had been turbid, was almost clear, and if only he had been tapped on one or two occasions between this date and August 26th, when the pressure was so high (108.5 cm.), we might conceivably have saved him.

It has seemed to us, after a lengthy experience of these more chronic cases of septic meningitis, that the virulence of the disease, both as manifested by the patient's clinical condition, and also by the number of cells, organisms, etc., in the fluid drawn off by lumbar puncture, shows a tendency to wax and wane, as if, from time to time, owing to the breaking down of adhesions, fresh showers of organisms were conveyed from the local site of infection—that is, the wound—to the meninges at large; just as in the more chronic cases of miliary tuberculosis successive showers are conveyed at varying intervals from the local lesion, it may be a caseating patch in the lung or a broken-down gland, to the blood stream and the various organs of the body.

It is with this factor in view that we should endeavour to secure and maintain efficient external drainage of the wound, even when there is a generalized meningeal infection.

That lumbar puncture, even, is not always without its attendant risks may be illustrated by the following fatal case following its use:

CASE IV.

Private S. was admitted on December 31st, 1915. The wound, a fairly clean punctured wound, was situated in the frontal region.

X-ray examination showed a track leading from the wound of entry down to the occipital region, where lay several shell fragments embedded in the under aspect of the right occipital pole.

An operation was performed on January 3rd, 1916. The wound of entry was cleaned up and pieces of bone removed from the brain substance. No effort was made to remove the shell fragments. The patient was well until January 7th, 1916, when he complained of severe headache. After that he had a steadily rising temperature and some hernial protrusion through the wound of entry. Lumbar puncture was performed under general chloroform anaesthesia. The initial pressure of the fluid was 53 cm. After about 5 fluid drachms of clear fluid had been removed, it began to become increasingly blood-stained, the last drachm containing almost pure blood. Almost immediately the needle had been withdrawn the patient suddenly became intensely cyanosed and his respiratory movements spasmodic, long irregular intervals occurring between each aspiratory effort. In spite of this, however, the pupils remained contracted and the pulse-rate normal and of good volume. Artificial respiration and the inhalation of oxygen produced no effect, and finally, about an hour after the commencement of the attack, he died, the pupils having dilated widely, and the pulse having given out a moment before death.

The autopsy, performed by Captain Henry, R.A.M.C., showed a septic track leading from the wound of entry to the under surface of the right occipital pole, where there lay several large fragments of shell casing. The under surface of the right occipital lobe was bathed in a large quantity of recently-shed blood. Secondary haemorrhage had occurred from the ragged torn end of a small cortical vessel lying on the under surface of the track.

We may reasonably assume that in this case it was the sudden removal of a certain quantity of supporting cerebro-spinal fluid that had just been sufficient to start the haemorrhage.

Except for this unfortunate accident, and the other case already described, in which fatal meningitis followed the rapid involution of a hernia after lumbar puncture, we have had no death attributable, either directly or indirectly, to the performance of lumbar puncture.

I am much indebted to Lieutenant-Colonel Sargent, R.A.M.C., and Lieutenant-Colonel Gordon Holmes, R.A.M.C., for their help in the preparation of this paper, which is largely a result of their work. My thanks are also due to Lieutenant-Colonel Ellery, R.A.M.C., Officer Commanding the Hospital, for permission to make use of the notes of cases treated there.

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TREATMENT OF FRACTURED MANDIBLE ACCOMPANYING GUNSHOT WOUNDS.

BY

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THE object of this article is to call attention to some methods of treating fractures of the mandible resulting from gunshot injuries, the more so since very few if any of those described in textbooks are suitable.

In a fractured mandible caused by gunshot there is practically always an external wound or wounds, though in not a few cases the bullet seems to have entered through the mouth. The fracture is always compound, and there is more or less loss of bone through comminution or actual carrying away of a portion of the mandible.

The result of such an injury is primarily to exaggerate considerably the typical displacements usually seen in civil practice. Any splint or other remedial treatment should be designed to correct such displacements, and it is necessary to recognize what these are likely to be.

Fractures of the anterior portion of the jaw involving the incisor region lead to (1) narrowing of the arch of the jaw; and (2) twisting inwards of each horizontal ramus, brought about chiefly by the action of the mylohyoid muscle.

Fractures of the posterior portion of the mandible lead to (1) considerable elevation of the posterior fragment (temporal and masseter muscles); (2) retraction and deflection of the chin; (3) depression of the larger fragment on the injured side. (2) and (3) are due to the unopposed actions of the genio-hyoid, genio-hyoglossus, and mylohyoid muscles.

As part of the conditions bearing upon treatment, it has to be remembered that many of the men have either (1) lost a large number of teeth; or (2) have a number of septic teeth present; or (3) were wearing dentures, which disappeared at the times of the injury.

These being the conditions, it is necessary to select some method of treatment which will conform to them and which will reduce any future deformity or disability to a minimum.

In the first place I will briefly review the better known methods and splints, and show in what way they fall short of requirements.

I. *The Four-tailed Bandage.*

This is worse than useless, since it in all cases (except simple fractures) further retracts the chin, increases the displacement, and causes increased laceration of tissue. Further, if tight it is very painful, and if loose it does not immobilize.

II. *Interdental Splints.*

There are general objections of a serious nature to all these. First, they require a plaster cast to be taken of the parts—a difficult and painful proceeding. Secondly, they require to be specially made for each individual case. Thirdly, to carry this out the services of trained specialists and special equipment of a cumbrous nature are required. Fourthly, the majority of such devices are unsuited to the nature of the injuries and do not control the displacements.

1. *The Hammond (wire) splint*, perhaps the best-known of interdental splints, cannot control either the marked upward displacement of the posterior fragment, nor prevent the inward tilting of fragments in anterior fractures. Moreover, its use necessitates the presence of a very large number of sound natural teeth.

2. *The Gunning splint*, and its modification the *cradle splint*, are unsuitable for posterior fractures; their use may result in permanent "open bite"; they are cumbersome and keep the mouth permanently propped open.

3. *The "Kingsley" splint* is perhaps the best form of interdental splint; it will effectively control all displacements. The sole objections to it are those attaching to the fact that it must be specially made for each case.

4. *The "Ottolengui"* and similar metal cap splints are unsuitable owing to the tediousness of their manufacture for every individual case.

III. *Plate and Screws and Wiring.*

Plating is, of course, inapplicable owing to the sepsis and to the space frequently existing between the ends of the bone. Wiring may be utilized with advantage in those cases in which the loss of tissue has not been too great. But when there has been much loss of bone, to draw the two ends together and wire them would either be impossible or grotesque, and would not result in a jaw which could be used subsequently for mastication. This method may, however, be employed in a modified manner as described below.

SUGGESTED IMMEDIATE METHODS OF TREATMENT.

In view of the conditions of the injury and the disabilities pertaining to usual methods of treatment outlined above, I have utilized the following methods and found them quite satisfactory:

1. *Splint.*

From what has been written above it might be inferred that I would not suggest the use of any form of splint, but in the one to be described it is believed all the enumerated objections have been overcome, with the added gain of extreme simplicity.

The splint advocated is a modification of the Kingsley splint. It has been adopted by the New Zealand Government (Defence Department) and supplies have been sent to the front for use chiefly on hospital ships.

The accompanying illustrations demonstrate the design and use of the splint. It is made of metal—nickel-silver, gilded—and consists of a body and two arms (Fig. 1). The body is concave and moulded to the shape of a dental arch. The arms are made of stout wire soldered to the body. The concavity is filled with old "modelling" composition. The splints are made in three sizes—small, medium, and large.

FIG. 1.—Writer's modification of Kingsley splint, showing concavity, which is filled with "modelling" composition.

The following are the instructions sent out with each set of splints:

The "Pickerill" Splint.

This splint is a modification of the "Kingsley" splint for fractured mandibles. The modification provides a ready-made splint for any case, instead of a special dental splint having to be made to fit each individual case. It can be used for simple and compound fractures, and also in cases when a portion of the bone is missing, to maintain the relative position of the two fragments, and especially to counteract the upper displacement of the posterior fragment, which in such cases always renders any subsequent prosthetic operations difficult or impossible, and more or less incapacitates the patient for life.

It can be removed and replaced without difficulty for dressing wounds. It requires no special technical skill for its adaptation. It may be used advantageously in combination with "wiring."

Directions for Use.

1. Splints are provided in three sizes—large, medium, and small. Select one which is of the approximate size required.

2. Remove the red composition by placing the splint in hot water.

3. Try the splint in the mouth over the teeth. If it is too deep at any point, trim it down with the scissors provided, leaving no sharp edges. Any other adaptations required may be made with the pliers provided.

4. Heat the composition in hot water and replace in the dried and warm splint. Whilst the composition is still warm press the splint down into position over the teeth and jaw, observing—

(1) That the composition is not too hot, or the subsequent removal of the splint may be difficult.
(2) That the fragments are in normal position.

5. Pass a bandage under the mandible up between each arm of the splint and the cheek, over the arm and down under the mandible, and there tie it firmly. The jaw is thus securely clamped (Fig. 2).

(A pair of pliers and a pair of small metal-scissors are sent with each batch of splints.)

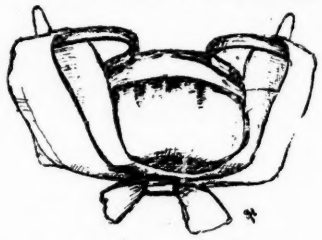

FIG. 2.—Writer's splint *in situ*.

2. *Intermaxillary Lacing.*[1]

This consists essentially in absolutely immobilizing the lower jaw by lacing it up to the upper jaw by means of wire ligatures around the teeth.

The following is the method used and described by the author.[2] The ligatures should be of silver or copper-gilt wire (gauge 21 or 20 B.W.G.), and the premolar teeth are the most suitable to which to affix them. These teeth are not so far back as to be inaccessible, and the comparative narrowness of their necks makes them useful for retaining the ligatures (see Fig. 3.) Two horizontal ligatures are first passed through the interdental spaces between the canine and first premolar, and the second premolar and first molar in both jaws, so as to include both premolar teeth. This should be done on both sides of the jaw. The horizontal ligatures on either side are then connected by vertical ligatures, all the wires being applied quite loosely.

FIG. 3.—Intermaxillary lacing, showing method in which it may be employed for the "permanent" treatment of fractures of the mandible.

The horizontal wires are next tightened, and then the lower teeth are made to articulate absolutely accurately with the upper teeth, and whilst in this position the vertical wires are tightened and the jaw thus immobilized. The method may be used as a temporary measure in all fractures of the mandible, in which cases ligatures of silk

or silkworm gut may be placed round the anterior teeth, as shown in Fig. 4. This affords the patient much relief, and is much more reliable than a four-tailed bandage.

FIG. 4.—Intermaxillary lacing, showing method in which the principle may be used as a temporary measure to prevent the depression and falling back of the chin.

The method may also be used as an adjunct to the open surgical methods of wiring the fragments, when fixation of the temporo-maxillary joint may be desirable for a time at least. Even if all teeth are present, the patient does not suffer from inability to take sufficient nourishment. There is always sufficient space between the teeth and behind the last molars for liquid food to pass. Patients do not suffer very much from a diet of milk, porridge, arrowroot, soup, etc., for five or six weeks. In a similar way a patient can use an antiseptic mouth-wash and use the tongue as a toothbrush on the lingual surfaces of the teeth.

The vertical wire ligatures may be left on for three weeks, after which in some cases they may be removed and passive movements allowed; they may be replaced by silk ligatures, as being easier to apply. A vertical ligature should be continued until the sixth week, especially during the time or times the patient sleeps, in order to prevent yawning, as the latter does far more harm than even a slight amount of mastication.

Another method of intermaxillary lacing is by means of "Angle's bands." These bands, either made or procured, are clamped to the teeth by means of a thread and nut. There are studs on the buccal surfaces round which ligatures are passed in order to bind the two jaws together.

Absence of teeth is no bar to intermaxillary lacing. When teeth are absent or so carious as to be useless for retention of ligatures I proceed as follows:

1. Holes are drilled through the jaw at the level of the roots of the teeth, and about three-quarters of an inch away from the ends of each fracture line. Stout silver wire is then passed through the holes and the fragments approximated if possible.

2. Further holes are drilled in the region of the lateral incisors of both upper and lower jaws, or other suitable positions, according to the site of the fracture, and a silver wire passed through both. The mandible is brought into the normal or desired position, and the wire tightened by twisting. The upper jaw is thus utilized quite satisfactorily for immobilizing the lower jaw.

3. *Submandibular Screws and Wire Splint.*

In cases in which none of the other above described methods are available for some reason, such as an extremely septic mouth or the loss of much of the alveolar processes, the following method may be adopted:

1. A very stout piece of German silver (or even iron) wire is obtained and bent to the shape of the lower border of the mandible—as the latter should be normally, and extending from angle to angle.

Four steel screws 1 in. or 1½ in. long, and preferably nickel-plated, are required, and some fine silver or brass wire for ligatures.

2. The skin under the mandible is sterilized, and four small incisions are made directly over the lower border of the bone, two on each side of the fracture line (avoiding, of course, the facial arteries). Holes are bored in the bone for the reception of the screws, and the latter are then screwed in firmly for a depth of about half an inch.

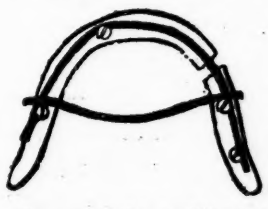

FIG. 5.—Submandibular screws and wire splint. The transverse wire is auxiliary to the main curved wire, and may not be necessary. The fine wires ligaturing the wire "splint" to the screws are not shown.

The stout wire splint is then ligatured securely to the four screws with the fine ligature wire, and the mandible is securely clamped (Fig. 5). Every effort should be made to prevent infection reaching the screws, or they may become loose before the fracture has united. It is an advantage to have the wire "splint" nicked frequently with a file near each screw to prevent the ligatures from slipping.

4. *Wiring.*

This method is desirable under two conditions:

1. When there is not much loss of tissue, and the fragments can be reasonably approximated.

2. When there is an appreciable loss of bone, and the fracture is so far back in the mandible that it is difficult or impossible to control the posterior fragment.

A wire may then be utilized, not so much absolutely to approximate the two ends, but to prevent the posterior fragment being so much elevated as it otherwise would be. Thus the bar of fibro-cicatricial tissue is considerably shortened, there will be more power in that side of the jaw, and the subsequent fitting of dentures may be done with less difficulty and with more chance of their being efficient and functional. For practically all fractures of the horizontal ramus the operation can be performed wholly from within the mouth. The difficulty, or otherwise, and success of the operation depends entirely upon the amount of swelling and sepsis present. Where this is marked and this method of treatment is deemed most suitable for the case, I prefer to immobilize the jaw by temporary intermaxillary ligatures for some days or a week, whilst antiseptic mouth washes are being used and the wound cleaning up. The method then employed is to drill through the bone between the roots of the teeth about half to three-quarters of an inch away from the fracture on either side, with a suitable drill. (For fractures in the premolar or molar region a "contra angle" bandpiece is used in the engine.) In order to mark the site of the perforation the drill is dipped in pure carbolic acid. Well gilded copper wire is then passed through the holes,* and tightened by twisting the ends, which are cut off and covered with either gutta-percha or fine rubber tubing. It is then advisable, wherever possible, to supplement this single suture by either inter-dental or inter-maxillary lacing in the neighbourhood of the fracture.

The wire suture should be removed (by being cut) at the end of six weeks. This may require a general anaesthetic, but it can usually be done under cocaine. This method has the advantage of being rapid, simple, and inexpensive.

Precaution.

Care should always be taken to clear out any comminuted fragments of bone from the wound at the time that the injury is treated by splints, or wiring, or lacing, otherwise, of course, union will be prevented, or a sinus will continue discharging long after the soldier might have returned to duty.

Treated by one of the above methods, there is no reason why many men whom one sees at present more or less totally incapacitated (from a military point of view) should not be back in the firing line in six weeks from the date of injury.

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THE TREATMENT OF CHLORINE GAS POISONING BY VENESECTION.

BY

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IN the BRITISH MEDICAL JOURNAL for May 27th, 1916, Professor Sir E. A. Schäfer writes that venesection might be tried in acute poisoning by chlorine gas. As the result of the attacks on April 27th and 29th of this year in front of Hulluch, in which chlorine gas was used by the Germans, I had the opportunity of treating a number of cases. As the patients arrived in a condition requiring more drastic treatment than the mere inhalation of ammonia or the injection of atropine, I tried the effect of venesection, and was so struck with its effects that I began to adopt it as a new line of treatment in specially selected cases; only those of the cyanotic type with much distress but with a good pulse were bled.

Selection of Cases.

Venesection is not required for all cases. The two types I called the "cyanotic" and the "cardiac failure." The latter are pallid, collapsed, and require no bleeding. They

*It is sometimes stated that there is considerable difficulty in returning the wire through the holes, but with a few common-sense precautions this is really a very simple matter.

are suffering from cardiac failure, due to a cause other than that of overstrain caused by the increased resistance through the pulmonary system. Cardiac stimulants are required and venesection has no marked result. The congestion found is secondary to cardiac incompetence, and in one case signs of chronic heart disease were present.

The cyanotic type has a different appearance, and is in the majority. The patient is deeply cyanosed, very dyspnoeic, but with a strong pulse, and the immediate trouble is due to the heart becoming increasingly weaker from overstrain in working against an increased pressure through the pulmonary system due to the inflammatory condition of the alveoli.

Result of Venesection.

In theory the two effects of venesection are:

(*a*) The resistance of the heart is lowered in ratio to the amount of blood withdrawn.

(*b*) The resulting abstraction of fluid from tissues to make up for the loss—and it is not unreasonable to suggest that this abstraction takes place from a place where fluid is in excess—that is, in the waterlogged lungs. This again would lead to a lessened resistance through the pulmonary system.

In practice the following results are obtained:

1. Relief of cyanosis (great).
2. Relief of congestion in the lungs, enabling the patients to breathe more easily.
3. Relief of the acute headache to which patients are subject after twenty-four hours of the gas poisoning.
4. Promotion of sleep by the physical withdrawal of blood from the system; a patient wakes refreshed and less distressed than before.

Time.

The time at which venesection is indicated is important. Early venesection is necessary, as is shown in the following example. Ten cases were cyanosed and equally distressed; 5 were venesected and did well with no further treatment; of the remaining 5, 2 died within twelve hours and 3 became livid and more distressed within twelve hours, and venesection was done then. These three required cardiac stimulants after bleeding. The longer the heart has to work against an increased peripheral resistance the weaker it becomes, and by bleeding early the resistance is lowered and the heart is not put to so great a work.

Method.

Direct incision into median cephalic or median basilic vein—or dissection with ligature of proximal end and then incision into vein. The amount of blood extracted depends upon the patient; from plethoric and alcoholic men 20 to 25 oz., from less robust or elderly men 15 to 20 oz. The time taken to extract 20 oz. is from fifteen to twenty minutes, because symptoms of collapse are produced if the depletion is quicker. The blood in all cases is dark and easily coagulates; in no case was there any odour of chlorine given off from the extracted blood.

Detailed Account of 30 Cases Venesected.

The following is a list of the first 30 cases upon whom venesection was performed and who lived. The result of the bleeding was taken in the patients' own words:

1. Pte. C., aged 22. Admitted very cyanosed and distressed. Oxygen administered. Bled 15 oz. Colour improved. Pulse becomes slower and patient sleeps six hours.
2. Pte. McF., aged 28. Admitted cyanosed, pulse rapid. Bled 20 oz. Says, "Relieved chest, which was fairly choked, and made me sleep well." Colour improved and remained good.
3. Lance-Corpl. McG., aged 32. Admitted cyanosed. Venesection done under oxygen. Bled 20 oz. Says, "Felt chest relieved, and made me sleep." Colour improved slowly and good progress.
4. Pte. C., aged 40. Admitted April 29th. Became cyanosed on May 1st. Bled 20 oz. on account of plethoric and alcoholic type. Says, "Stopped me breathing so quickly and made me sleep." Colour remained good.
5. Pte. D., aged 31. Admitted delirious and restless. Very cyanosed. Bled 20 oz. Says, "Relieved pains in head, eased breathing, and made me sleep." Colour improved.
6. Sergt F., aged 38. Admitted cyanosed and unconscious. Bled 20 oz. Says, "Felt grand. Relieved headache and eyes, and slept whole afternoon after it." Colour remains good.
7. Sergt. McC., aged 47. Admitted cyanosed, delirious, and collapsed. Bled 15 oz. Says, "It did good to breathing, and relieved pain in head." Colour remains good and pulse slower.
8. Lance-Corpl. L., aged 23. Admitted unconscious and cyanosed. Pulse feeble. Given strychnine. Pulse improved next day, and bled 20 oz. Says, "Helped well; slept well after it, and relieved pains in head."
9. Pte. H., aged 37. Admitted cyanosed, dyspnoeic, and delirious. Bled 20 oz. Says, "Felt improved, lighter in head, and relieved tightening in chest." Colour remains good.
10. Lance-Corpl. G., aged 31. Admitted very cyanosed and dyspnoeic. Bled 25 oz. Says, "Cut did good. Relieved pain in head, made breathing easier, and made me sleep." Colour remains good.
11. Pte. A., aged 22. Admitted slightly cyanosed, and pulse good. At night became worse, and following morning very cyanosed, delirious, and pulse rapid. Bled 20 oz. Slept afterwards. Colour improved, but remains delirious. Following day conscious; colour good and pulse-rate lowered.
12. Corpl. M., aged 29. Admitted very cyanosed and dyspnoeic. Pulse 124. Bled 25 oz. (plethoric). Says, "Relieved my breathing, and I slept well." Colour remained good, and pulse-rate 100 six hours later.
13. Pte. H., aged 21. Admitted very cyanosed. Quick, irregular pulse. Bled 15 oz. Says, "It relieved my head and the tightness of chest and made me sleep." Colour improved, but not good. Oxygen given under pressure at intervals. Twenty-four hours later colour and pulse much improved.
14. Lance-Corpl. K., aged 22. Admitted unconscious, cyanosed, dyspnoeic, and rapid pulse. Bled 20 oz. Says, "Slept for hours after it—did good to my head and chest, and I have felt better ever since." Pulse slower and colour remained good.
15. Pte. C., aged 28. Admitted unconscious, very cyanosed and dyspnoeic. Bled 20 oz. Says, "It made my chest easier, and I could breathe better. My headache was cured." Condition remained good.
16. Lance-Corpl. M., aged 34. Admitted unconscious. Very cyanosed and very dyspnoeic. Bled 20 oz. Says, "Felt a good deal better; cleared my head; chest felt lighter, and made me sleep." Breathing became slower and colour improved.
17. Lance-Corpl. McK., aged 19. Admitted quite livid and unconscious. Pulse feeble. Cardiac stimulants were first given, oxygen, then venesection. Bled 15 oz. Became conscious twelve hours later. Cardiac stimulants repeated. Oxygen given under pressure at intervals, and colour improved. Eight days after admission he was evacuated in good condition.
18. Lance-Corpl. C., aged 38. Admitted very cyanosed and distressed. Brandy given and oxygen. Had been bled at field ambulance, but, on account of cyanosis, venesection was again done. Bled 20 oz. Colour improved and became less distressed. Five days later still unconscious, but less distressed and colour improved.
19. Sergt. L., aged 25. Admitted cyanosed, dyspnoeic, and vomiting. Bled 20 oz. Says, "Slept immediately after it, chest felt lighter." Colour remains good. Gastric distension relieved with sodium bicarbonate.
20. Pte. R., aged 23. Admitted unconscious. Very cyanosed and distressed. Bled 20 oz. Says, "Slept after it and felt easier." Colour improved, but still a little cyanosed. Oxygen given under pressure with benefit. In twenty-four hours colour improved and remained good.
21. Pte. K., aged 26. Admitted semi-conscious and much distressed and cyanosed. Bled 15 oz. Says, "Felt easier; chest and head were much relieved, and my breathing was improved." Colour improved and condition remained good. Four days later developed gangrene (dry) of left leg below knee, due to embolism of popliteal artery. Ten days later amputation at seat of election, with good recovery.
22. Pte. E., aged 47. Admitted semi-conscious, very cyanosed, and very dyspnoeic. Bled 20 oz. Says, "Felt grand; slept; eased chest and head." Colour remained good and breathing improved.
23. Pte. F., aged 19. Admitted very cyanosed and distressed. Previous bleeding at field ambulance, but owing to distress a second venesection was done. Bled 15 oz. Says, "It did good to my chest and head, and I slept after it." Colour improved, pulse became feeble, and cardiac stimulants were required. Evidently his condition was serious at the field ambulance to necessitate bleeding there, and his journey from there would cause his second bout of distress. Later he developed acute bronchitis, but his condition is good.
24. Pte. N., aged 30. Admitted very cyanosed, very dyspnoeic, and vomiting. Bled 20 oz. Says, "Felt better, and relieved breathing and awful pains in head." Colour remains good.
25. Pte. D., aged 26. Admitted unconscious, very cyanosed and distressed, and vomiting. Bled 20 oz. Says, "Helped head and breathing, and felt better." Colour remained good.
26. Pte. H., aged 26. Admitted unconscious, very cyanosed and distressed. Bled 20 oz. Says, "Felt a great deal better, relieved breathing, and slept eight hours after it." Colour remained good.
27. Pte. B., aged 37. Admitted unconscious, very cyanosed and distressed. Bled 20 oz. Colour improved and breathing became less distressed; twenty-four hours later returned to consciousness. Had an uninterrupted recovery.
28. Pte. B., aged 32. Admitted cyanosed and unconscious. Bled 20 oz. Condition improved and colour remained good. Later developed acute bronchitis, but condition is improved.

29. Pte. B., aged 19. Admitted very cyanosed and distressed, and vomiting. Oxygen given under pressure while venesection was done. Bled 15 oz. Says, "Felt chest easier, headache gone, and breathed better. Slept well after it." Colour slowly improved, and remained well.

30. Pte. Q., aged 45. Admitted very cyanosed and dyspnoeic. Alcoholic type. Bled 25 oz. Says, "Relieved me more than anything else, and I slept for hours." Colour improved and remained good.

These are notes on those of the patients who were venesected and lived. They were taken two days after bleeding. All cases were evacuated to the base on the seventh or eighth day after admission with the exception of A., F., and L., who were still in hospital with acute bronchitis.

The effect of venesection on all the cases was the same. The great thing the patients needed was freedom from the heart's embarrassment and rest. Whether the improved condition was due to the rest or the venesection I do not know, but I firmly believe that it was the depletion of blood which caused the sleep, and hence the benefit, and I began to rely upon venesection as a routine line of treatment for the cyanotic group of cases.

DEATH AFTER NITROUS OXIDE-OXYGEN AND LOCAL ANAESTHESIA.

BY

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In a somewhat large experience of nitrous oxide and oxygen anaesthesia, with and without the addition of ether, I have never seen any other case like that which I here relate. The patient very nearly died during the operation, and succumbed two hours and a half later without recovering consciousness.

I was asked to give an anaesthetic on January 29th, 1915, to a patient of Mr. Gilbert Barling, F.R.C.S. The operation was to be gastro-enterostomy for ulcer of the stomach, which was probably simple. The patient, aged 66, was a thin and anaemic-looking man of earthy complexion, of whom his medical attendant, Dr. Paulin of Malpas, said that he was very nervous. Seven weeks before Mr. Barling saw him he had fainted while conducting a religious service. He had been in bed for six weeks under careful treatment, and had had a very profuse haemorrhage from the bowel twelve days before operation; no rectal haemorrhage nor vomiting of blood had occurred since then. During the haemorrhage morphine, gr. ¼, had been injected several times, and he bore it well. He said that he had no cough, and nothing abnormal was found in his lungs. The pulse was soft, the apex beat was a trifle out—about ½ inch outside the usual position—while his heart sounds were rather "flappy," but clear and regular. Nothing abnormal was found in his urine.

Mr. Barling thought the patient was a good subject for nitrous oxide and oxygen anaesthesia, and I fully agreed with him. One and three-quarter hours before operation morphine gr. ¼ and scopolamine gr. $\frac{1}{150}$ was injected, and just before operation, as the patient was not drowsy and answered questions promptly and clearly, gr. ⅓ of morphine was injected intramuscularly before he was carried downstairs to the theatre. On the table gas alone was quietly and easily administered for about ten breaths, then 5 pints of oxygen a minute were added to it, and rebreathing of the gases was allowed. As soon as the patient was unconscious the layers of the abdominal wall were infiltrated with weak novocain solution, and when the abdomen was opened the peritoneum was infiltrated with quinine and urea solution by Crile's method.

The patient's pulse from the very first became very, very weak, but the breathing was good and regular, and when the operation was begun, in spite of much more oxygen, the pulse could hardly be felt at the wrist. Throughout the operation there was no haemorrhage from the wound, and no artery forceps were applied. As operation very rapidly proceeded his pulse vanished, respiration gradually became deeply gasping, although practically no gas was administered and seven or eight pints of oxygen a minute were turned on, which is more than twice as much as is usually given. Air also was allowed at times, and for the latter part of the operation only pure oxygen was given. When the pulse became bad the patient's colour was greyish and pallid, but never blue. Muscular relaxation was absolute throughout the operation. At first the patient's pupils were well but not minutely contracted and fixed; the eye reflexes, brisk at first, were very dull for about twenty minutes, but later on they returned with the administration of pure oxygen. For the last twenty minutes of operation the patient appeared to be dying, the pulse being impalpable and respiration being very prolonged, slow, and gasping, although pure oxygen was administered; therefore, before the abdomen was closed, a vein in the arm was opened and saline solution, to which was added a few drops of pituitary extract and some brandy, was injected. The pulse soon became palpable, gradually improving in quality, and the eye reflexes became quite active and respiration less gasping; 1½ pints of saline were infused; a rectal injection of glucose and sodium bicarbonate in tap water also was given on the table.

When the patient was back in bed the pulse gradually improved further, and became really very good in volume, regular and steady (120); he groaned during respiration, which was quiet, and we thought that he would recover, but consciousness never returned.

About one hour later collapse occurred. More fluid with brandy was given intravenously, but the pulse became flickering, respiration very gasping, and after about three-quarters of an hour his jaw dropped and he soon died.

Unfortunately no *post-mortem* examination was allowed.

The anaesthesia lasted thirty-five minutes, during the last fifteen of which hardly any gas was given but a good deal of air, and a large quantity of oxygen with rebreathing. There was no respiratory obstruction at any time.

Why did this man die? As a comparison I may say that five days previously I had administered gas and oxygen by the same method to an old lady of 72, who appeared to be in worse condition than he, for a severe gall stone operation; the difference in the treatment was that she had before operation a trifle less morphine, which made her drowsy beforehand. The anaesthesia and muscular relaxation were perfect, much less oxygen was necessary than in the case I have related, her colour was pink throughout, and respiration and circulation were very good; there was no evidence of shock, although the administration lasted one and a half hours.

Points that occur to me for consideration are:

1. That the circulation failed long before respiration.
2. The failure could not have been due to traumatic shock, because it began before incision.
3. The morphine could not be incriminated, because the patient had had as big or bigger doses before, and was not drowsy before operation.
4. There was no asphyxia from obstruction to respiration, and twice as much oxygen as is usually necessary was inhaled, while very little gas was given.
5. I do not think that death was due to too much gas, because circulatory failure occurred very early, beginning with the administration of the gas.
6. The patient was psychically a very curiously nervous man, and I am inclined to think that psychic shock, together with anaemia, causing heart weakness, were largely responsible for the fatality. This explanation, I admit, is hardly satisfactory.
7. Why did consciousness never return?
8. Would the early addition of a small quantity of ether to the gases have been of value?

Memoranda:

MEDICAL, SURGICAL, OBSTETRICAL.

SYPHILIS: TWO EARLY CASES OF REINFECTION AFTER TREATMENT WITH SALVARSAN AND MERCURIAL INUNCTIONS.

In July, 1915, Dr. —— asked me to see one of his patients whom we had treated for syphilis (acquired twelve months earlier) in February and March of the same year, by giving three injections of salvarsan and using mercurial inunctions for a period of two months. He had a chancre on the glans and enlarged inguinal glands, and admitted the possibility of reinfection. At that time he did not wish to have further salvarsan treatment, and in six weeks developed all the usual secondary signs and symptoms, which immediately cleared up when kharsivan was given.

A prostitute, aged 21, was discharged from this institution in November, 1915, after having been treated for syphilis with kharsivan and mercurial inunctions for a period of a month. She returned on March 28th, 1916, and when I saw her in April had a chancre on the right labium and enlarged inguinal glands. She admitted still earning her living by prostitution.

These two cases I think serve to demonstrate the possibility of effecting a cure by the use of the above method, if the kharsivan or salvarsan is given at suitable intervals, as it seems hardly possible for a person to be reinfected unless the first infection had been eradicated.

Gateshead. LIONEL L. WESTROPE.

A CASE OF LYMPHANGIOPLASTY.

It is said that, whereas lymphangioplasty gives great relief in the brawny arm of cancer of the breast, in lymphatic oedema of the leg its results have not been satisfactory. I venture, therefore, to publish the following case:

J. B., aged 28, was scalded on the lower parts of the legs, ankles, and feet when 13 years old. Healing was very slow, and she was unable to walk for six months. Then the legs became very swollen and painful on standing or walking. The usual methods of treatment failed, and she was obliged to give up her work, which entailed long standing.

On June 30th, 1913, lymphangioplasty was done in both legs after Sampson Handley's method (see BRITISH MEDICAL JOURNAL, April 9th, 1910). No. 12 woven tubular silk was used, but no special instruments. She was allowed up after fourteen days. Improvement was slow but continuous, and now (July, 1916), she walks many miles every day without discomfort or swelling.

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Reviews.

NERVE INJURIES.

A BRIEF and business-like account of *Nerve Injuries and their Treatment*[1] has been written by Temporary Colonel PURVES STEWART, A.M.S., and Captain EVANS, R.A.M.C.(T.). Most of these injuries are traumatic, the nervous symptoms occurring either at once or after the lapse of time. Others occur independently of any known trauma, such as various forms of peripheral neuritis (including some instances of "trench foot"), and cases of the compression of nerves by such things as cervical ribs or aneurysms. The authors discuss the conditions simulating nerve injury, and consider the prognosis before and after surgical treatment. Stress is laid on the importance of securing strict asepsis before any operations for the suture of nerves are undertaken; hence in cases of shot and shell wounds the suture is commonly to be undertaken only after the primary wounds have healed. The last hundred pages of the book deal with the signs and symptoms produced by trauma of the individual nerves. The book is well illustrated, and should be of great service to the many surgeons and physicians who have to deal with the wounded from the front.

TREATMENT AFTER OPERATION.

MR. LOCKHART-MUMMERY'S *After-treatment of Operations*[2] has become a standard manual. It was published originally in 1903, and a fourth edition has recently been issued. The experienced operator is often anxious lest his house-surgeon, or the practitioner in charge of the case, should be unable, however willing, to carry out his instructions about after-treatment. This treatise will, as its title professes, afford that necessary information. The general teaching is very sound: thus the author reminds the reader that a slight rise of temperature is still the rule after an operation of any magnitude, however well the surgeon may have carried out aseptic precautions. The superstition about keeping the operation case in the dorsal recumbent posture, less prevalent at the present date than it was when the first edition appeared, is judiciously deprecated, and the reader is taught that for elderly subjects the semi-recumbent position is, whenever possible, the only posture in which the patient should be placed. The directions for the after-treatment of certain operations new, or now far more frequently undertaken, such as suprapubic cystotomy, are highly satisfactory, and in these war-stricken days the addition of a chapter on gunshot wounds is most acceptable. The last words, however, remain the most important, for they impress upon the reader that the best results will always be obtained by the prevention rather than the treatment of shock.

[1] *Nerve Injuries and their Treatment.* By Purves Stewart, M.A., M.D.Edin., F.R.C.P., Temporary Colonel A.M.S., and A. Evans, M.S., M.D.Lond., F.R.C.S., Captain R.A.M.C. Oxford Medical Publications. London: H. Frowde; Hodder and Stoughton. 1916. (Demy 8vo, pp. 220; 97 figures. 8s. 6d. net.)

[2] *The After-treatment of Operations. A Manual for Practitioners and House-Surgeons.* By P. Lockhart-Mummery, F.R.C.S.Eng., B.A., M.B., B.C.Cantab. London: Baillière, Tindall, and Cox. 1916. (Cr. 8vo, pp. 283; 39 figures. 5s. net.)

MENTALLY DEFICIENT CHILDREN.

THE enactment of the Mental Deficiency Acts for England and Wales and Scotland and the amendment of the Elementary Education (Defective and Epileptic Children) Act have made it necessary for Drs. SHUTTLEWORTH and POTTS to subject their book on *Mentally Deficient Children*[3] to a thorough revision. The report of the Royal Commission, which was published in 1908, excited widespread interest among public authorities and social workers, and as the result of considerable pressure the Home Secretary brought in a measure to give effect to its recommendations in 1913. A short account of the principal provisions, more especially those relating to children, is given in the edition now before us. There is a very good description of the pathology of forms of mental deficiency; two interesting groups of cases spoken of as word-deaf and word-blind children are described, and the microscopical conditions found in cases of primary and secondary amentia are stated. In discussing inherited syphilis as a cause of mental defect, Dr. Mott's researches are described, and the confirmatory evidence recently obtained by means of the Wassermann reaction related. The results which different observers have obtained, varying from 1.5 per cent. to 60 per cent., differ so much, however, that they cannot be considered as final. A new chapter on the psychopathies of adolescence, in which juvenile general paralysis of the insane, dementia praecox, developmental epilepsy and epileptic mental degeneration, pubertal perversion of moral sense, and insanity in childhood are well described, has been added, as they are often closely connected with states of congenital unfitness. The medical examination of mentally defective children under the regulations of the Board of Education is the title of one of the chapters; it contains much useful information. The chapter is rendered more interesting by the inclusion of Dr. E. S. Pasmore's flag chart of heredity and a copy of the model arrangements issued by the Board of Education circular.

The necessity for after-care of these children has been established, and much has been accomplished in this direction by the formation of the Central Association for the Care of the Mentally Defective. A list of the certified institutions in England and Wales, of institutions for Poor Law cases, of certified houses and approved homes, of institutions for imbeciles and the feeble-minded under the Metropolitan Asylums Board, and institutions in Scotland, is given in the appendix, as well as a copy of the medical certificate required by the Mental Deficiency Act. There is a copious bibliography, and the number of illustrations has been considerably increased. This is the most concise and up-to-date book on the subject which we have read, and we would recommend every one who is interested to procure it and read it.

TROPICAL MEDICINE.

Mosquito Control in Panama,[4] by LE PRINCE and ORENSTEIN, is the title of a book descriptive of the methods used in the canal zone for combating malaria, yellow fever, and other tropical diseases during the building of the canal. There is an introduction by Dr. HOWARD. The work is divided into two parts: the first dealing with the antimalarial campaign, and the second with the yellow fever campaign; the latter includes an account of the work done in Havana during the campaign which stamped that disease out of the city. The result of the sanitary work in Panama—namely, the successful completion of the canal—is known to all; therefore it is specially interesting to have a detailed account of the different methods and plans that were adopted for this end. In this most interesting book all the details are presented in the clearest fashion, and by looking at the excellent photographs the reader will be able to follow everything as if one had actually been on the spot. It makes the work not only valuable for the history of the canal itself, but also for the practical application of similar methods in other parts of the world. The destruction of mosquitos is not

[3] *Mentally Deficient Children: Their Treatment and Training.* By G. E. Shuttleworth, B.A., M.D., etc., and W. A. Potts, M.D., etc. Fourth edition. London: H. K. Lewis and Co., Ltd. 1916. (Cr. 8vo, pp. 303; illustrated. 7s. 6d. net.)

[4] *Mosquito Control in Panama. The Eradication of Malaria and Yellow Fever in Cuba and Panama.* By J. A. Le Prince, C.E., A.M., and A. J. Orenstein, M.D.; with an introduction by L. O. Howard LL.D. New York and London: G. P. Putnam's Sons. 1916. (Post 8vo pp. 352; 100 illustrations. 10s. 6d. net.)

an easy task, and to achieve success a combination of methods must be adopted. The importance of screening houses is well brought out. This is, perhaps, one of the most valuable means we have of preventing malaria and other mosquito-borne diseases, and the fact of the Americans having adopted it so largely in the Panama zone speaks for itself. One would like to see screening much more widely used in British colonies and in other parts of the world. The shortcomings of the oiling method are very clearly stated, as are also those attending the introduction of fish. Of course, all mosquito work involves a considerable outlay of money, but it is surprising how little this really comes to after things are going. The observations made on the flights of mosquitos are of the greatest importance, and should certainly be followed up both in the canal zone and in other parts of the world. It is quite possible that observations made in the canal zone may not equally apply to other parts of the world. The general principles, however, will, and details must be arranged suitable to special localities. As other guides, Malcolm Watson's work in the Federated Malay States will also be found useful, as well as the work accomplished by Ross at Ismailia and Sierra Leone. The importance of making the tropics more healthy is evident to all, but even granted that this can be done, it does not follow that the white man will be able to live indefinitely in such areas and propagate his species there.

In an essay entitled *The Trypanosomes of Sleeping Sickness*[5] the question of the alleged identity of *Trypanosoma brucei* with the trypanosomes causing disease in man (sleeping sickness) in Nyasaland is discussed. An analysis of the different curves of the various trypanosomes is first given, and though there are undoubted difficulties in the interpretation of some of these analyses, the author believes it possible that some, or even many, of the points at present obscure might be elucidated if all the circumstances were known. He considers that his investigation, which he admits is incomplete, has demonstrated that there is no scientific justification for classifying as identical, from length measurements, the *T. brucei*, the *T. rhodesiense*, the human Nyasaland strains, and the Nyasaland wild game strains, unless indeed all the dimorphic strains, including *T. gambiense*, are to be considered merely as variants of one species of trypanosome. As already stated, there are some reasons for regarding them as probably different, but until uniformity of method is adhered to it seems unlikely that much real information will be obtained from this method of investigation. Among other matters discussed, are the questions whether the trypanosomes have the same habits and actions, whether they infect the same animals and kill them in the same time, whether they have the same carrier, and whether their growth or development in the carrier follows the same course? Cross-inoculation experiences are next related, and finally experiences of the effect of various serums. The author ends by setting out a series of conclusions, the gist of which would seem to be that the subject is still *sub judice*. The paper is of a somewhat technical nature, and ought to be studied in the original by those interested in the subject.

NOTES ON BOOKS.

CHILD welfare forms the basis of national prosperity. Nations are gathered out of nurseries. The problem of the conservation of child life is of paramount importance. The loss of the nation's manhood in the war has done much to quicken the sense of what we owe to posterity in the care of children, a sense that had long been awakened by the efforts of many societies for promoting the welfare of infants and children during the last decade or more. Dr. T. N. KELYNACK has done a useful piece of work in editing a *Child Welfare Annual*[6] meant to be a companion year book to the monthly medical and educational journal *The Child*, in company with its companion volume *The Year Book of Open-Air Schools and Children's Sanatoria*. In this new annual will be found original articles dealing with various aspects of the welfare of children, schemes for child welfare work in various townships and counties, and a long *catalogue raisonné* of national associations, societies, orphanages, homes, and other similar institutions dealing with children in distress. The annual should be of great service to almoners, home visitors, workers of all sorts interested in child welfare, and secretaries of kindred associations. It contains abundant evidence that the nation is awake to the importance of protecting our children in every way.

Dr. EDITH B. LOWRY'S guide for young mothers[7] gives an account of what the expectant mother should do to ensure that her child should be sound when born, and what she should do to keep it in health after birth. The various common disorders of infancy and their treatment are touched upon. The book is somewhat loosely written, but contains much sensible advice, and no doubt fills a want.

[5] *The Trypanosomes of Sleeping Sickness.* By G. D. Maynard, F.R.C.S.E. The South African Institute for Medical Research (No. VI). Johannesburg: Published by the Institute. 1915. (Sup. roy. 8vo, pp. 39; 26 charts. 5s.)

[6] *The Child Welfare Annual:* A Companion Year Book to *The Child*. Edited by T. N. Kelynack. Vol. i. London: J. Bale, Sons, and Danielsson, Ltd. 1916. (Cr. 4to, pp. 366; illustrated. 7s. 6d. net.)

[7] *Your Baby: A Guide for Young Mothers.* By Edith B. Lowry, M.D. Chicago: Forbes and Co. 1915. (Cr. 8vo, pp. 251. 1 dol.)

VENEREAL DISEASES:

STATE PROVISION FOR THEIR DIAGNOSIS AND TREATMENT.*

The Local Government Board, by an order dated July 12th, has put into operation the recommendations of the Royal Commission on Venereal Diseases so far as the provision for diagnosis and treatment is concerned. A circular, addressed to councils of counties and county boroughs and the City of London, sets out the manner in which this new duty now devolving upon these local authorities is to be carried out. The basis of the scheme is the free provision for the whole community of laboratory facilities for diagnosis, and of adequate and skilled free treatment for all persons affected with venereal disease; 75 per cent. of the cost of carrying out schemes which have been approved by the Local Government Board will be met from imperial funds, as recommended by the Royal Commission.

The Regulations of the Order, which came into force on July 12th, have been made under the Public Health Acts. Section 2 of the Public Health (Prevention and Treatment of Disease) Act, 1913, provides that, except in case of emergency, the Board shall not require a county council to execute and enforce regulations made under Section 130 of the Public Health Act, 1875, without the consent of the council, but having regard to the findings of the Commission, the Board has arrived at the conclusion that the conditions of the present war constitute a case of emergency within the meaning of the Act of 1913.

The regulations provide that the council of every county and county borough (1) shall, subject to the approval of the Board, make arrangement for enabling any medical practitioner practising in the area of the council to obtain, at the cost of the council, a scientific report on any material which the practitioner may submit from a patient suspected to be suffering from venereal disease; and (2) shall prepare and submit to the Board a scheme (*a*) for the treatment at and in hospitals or other institutions of persons suffering from venereal disease, and (*b*) for supplying medical practitioners with salvarsan or its substitutes for the treatment and prevention of venereal disease. It will therefore be the duty of the council to proceed at once to the consideration of the steps which it should take in these directions and with the formulation of a scheme for the provision of the necessary facilities for diagnosis and treatment.

Provision of Laboratory Facilities.

As facilities for the practical application of scientific laboratory methods to the diagnosis of disease are already provided in many universities and large hospitals, a council is advised to make arrangements with the authorities of one or more of these institutions. The laboratory should be in charge of a skilled pathologist of experience in this particular work. It is not proposed that new laboratories should be established for this work. The facilities provided by the council should be available for the whole population of the area, and the arrangement

* Venereal Diseases. Circulars issued by the Local Government Board on the 13th July, 1916, to Councils of Counties and County Boroughs, Governing Bodies of Hospitals, and Boards of Guardians. Regulations made by the Local Government Board on the 12th July, 1916; and Memorandum by the Medical Officer of the Local Government Board on the organization of medical measures. London: H.M. Stationery Office, to be obtained through any bookseller, price 1d. Pp. 34.

should provide for the examination without cost to the patient or the practitioner of specimens sent by any doctor practising in the area. It is not necessary that the laboratory utilized by the council should be situated in its area. The arrangements must be approved by the Board.

Provision of Facilities for Treatment.

Treatment should be available for the whole community, and should be so organized that persons affected by these diseases shall not be deterred from taking advantage of the facilities which are provided. This result would not be attained by the establishment of special institutions for the treatment of venereal diseases; the institutional treatment required should be provided at general hospitals. The special facilities to be provided should be designed chiefly for cases in which the diseases are in the communicable stage. In some cases it may not be practicable to secure the requisite facilities at a hospital situated within the area of the council, nor would this be essential if the hospital selected be accessible from the more densely populated parts of the area. Thus, in the case of areas adjoining the metropolis, it may be considered desirable to negotiate with the authorities of general hospitals in London, and in the provinces many county councils will find that the most suitable facilities for their areas can be provided at hospitals in the county borough situate within or near the geographical county.

In negotiating with the authorities the council should make it clear *that the treatment provided should be available for all comers, irrespective of the place of residence or the means of the patient.* Some beds in hospitals will be needed (1) for the treatment of cases of syphilis by salvarsan or its substitutes, (2) for the temporary treatment of acutely contagious cases both of syphilis and gonorrhoea, and (3) for cases in urgent need of surgical treatment. [The italics are in the original.]

In all cases it will be important to arrange *that the clinics are not specially designated as for venereal diseases and that nothing is done to distinguish the patients who attend for treatment of these diseases.* [The italics are in the original.]

Payments to be made by the council for the service rendered by the hospital authorities should be in the form of a lump sum annually, subject to revision in the light of experience; if this proved impracticable, the council might undertake to pay the actual cost incurred by the hospital authorities during the first year subject to some reasonable maximum payment. The council should make it clear that no interference with the internal administration of the institutions is proposed.

Local Committees.

For the purpose of disseminating information as to the scheme and for making suggestions to the council, the Board considers it desirable that a committee should be formed containing representatives of all doctors practising in the area, the police and Poor Law authorities, midwives, probation officers, rescue workers, clergy and ministers of all denominations, and voluntary agencies concerned in the treatment of these diseases; the committee should include a sufficient number of suitable women together with representatives of the Local Medical Committee for the county or county borough.

Relation of General Practitioners to the Scheme of Local Authorities.

The Board recognizes that it is essential to secure the co-operation of general practitioners with the local authorities which organize schemes of treatment and with the institutions which are comprised in these schemes, and that medical students and practitioners should have access to such institutions. The council should instruct the medical officer of health to consult from time to time the Local Medical Committee for the area as to the means by which the fullest possible use can be made of the facilities provided under any scheme. Every effort should be made to secure the full co-operation of private practitioners in the treatment of cases. The Board considers that every patient, whether or not an insured person under the provisions of the Insurance Act, who attends at an approved institution for treatment, may properly be asked whether he has a doctor of his own, and whether he is willing to be treated by that doctor. If the patient has no doctor, or being an insured person has not yet chosen a panel doctor, but is willing to be referred to a private practitioner for treatment in association with the treatment provided at the institution, he should be advised to choose a doctor who would co-operate in this treatment.

The council should include in its "scheme arrangements for the free supply of salvarsan, or its substitutes, to medical practitioners practising in the area of the council in cases in which the medical officer of an approved institution has authorized the administration of these drugs. The supply should be limited to those doctors who are known to have had experience in the administration of the drugs, or who have attended for a sufficient time the practice at the institution."

The facilities provided by the council should be available for the whole population of the area, and it should be understood that district medical officers and medical officers of poor law institutions will be entitled to make full use for the benefit of their patients of the laboratory facilities provided by the council, including supplies of salvarsan or its substitutes, on the same conditions as those in which these drugs are provided for medical practitioners.

Memorandum by the Medical Officer of the Local Government Board.

The memorandum points out that the times for holding the out-patient clinic should be arranged to meet the needs of the largest number of patients. Arrangements should be made for some of the clinics to be held at, say, 5 p.m. to 7 p.m., or later in the evening. An essential condition of arrangements with hospitals is the preparation of returns relating to the cases treated.

The Board considers that some parts of the treatment required can in many cases be given by the patient's own doctor, and, where this is arranged, the medical officer should furnish the practitioner with a report on the patient's treatment at the clinic with suggestions as to continued treatment. Directions are given for the labelling and transmission of pathological specimens to the laboratories, and a draft of the form of report. Instructions are given for the taking of blood for the Wassermann test, for collecting cerebro-spinal fluid for the Wassermann test or for the microscopic examination of its cellular contents; for taking a specimen of exudate for the detection of the *Spirochaeta pallida*, and for taking specimens for the detection of gonococci.

The report of the Royal Commission gave draft forms of printed notices to be handed to patients found to be suffering from syphilis or gonorrhoea. It attached considerable importance to the warning of every patient by the doctor attending on the dangers of the disease to the patient and to others. The Commission held it to be a point of honour that this printed warning should be given to each affected person. But there is no direction on the suggestion in the memorandum of the medical officer of the Board.

EDINBURGH SCHEME FOR MATERNITY SERVICE AND CHILD WELFARE.

(*Concluded from p. 80.*)

Preventive Part of the Scheme.

FOUR "Edinburgh Child Health Centres," all situated in districts where there is a dense population of young life, already exist. Their aim has been to induce mothers to bring their children to the centre and to receive advice regarding proper clothing, feeding, and general attention. The mothers have attended in increasing numbers, and have shown a real interest in carrying out the instructions received. Nurses are present at the clinics, and subsequently visit the homes of the children. Dr. Maxwell Williamson considers that these centres should play an important part in the scheme, and that their number should probably be increased. If any diseased condition was found in any child at such a centre it would be at once passed on to the particular centre (dispensary or other) specially suited for its treatment, and would be connected with it by a "card system."

There are also the five kindergarten schools in the city; but Dr. Williamson points out that the number of children (twenty-five to thirty) supervised at each has been so small as even in the aggregate to amount to only a fraction of the number whose interests would require to be safeguarded in a well-conceived scheme. Children are brought to these kindergartens each morning by a responsible messenger, and along with them, where possible, their food for the day. Milk is supplied to them at a small

charge, or free if necessary. The children are kept clean and happy under the supervision of qualified teachers and assistants, and return home with their relatives each evening. There is, Dr. Williamson says, room for one such school in almost every street of the city, and he hints that money might better be spent on this than on some of the other health objects on which it was at present being expended by local authorities. In the meantime it is proposed to include all the existing institutions in the scheme. The four day nurseries in the city are all situated in densely populated districts, and all provide comfortable, cleanly, and homely accommodation for children whose mothers are at work or otherwise engaged during the day. From 20,000 to 25,000 children have passed through these nurseries each year, and under the system of visitation to be included in the scheme it will be possible more fully to utilize their resources, and so to end completely the objectionable and even dangerous plan of shutting up young children in the smaller class of tenement dwellings during the mother's absence.

Open-air Play Centres and Convalescent Homes.

Open-air play centres have been recognized by the corporation for some years as important preventive means. There are four of them, and recently the work of the "Outlook Tower" has included the provision of a considerable number of open spaces with gardens in some of the more densely populated parts. It is proposed that one open-air play centre should be at once included in the scheme. Others can be added as money and the voluntary supervision of the work by ladies become available. The city is fortunate in having several country institutions for ailing or convalescent children, including the Holiday Home at Humbie House, which will be included in the scheme, but it is hoped that the corporation will consider it proper to establish a much larger institution. The Polton Farm Colony, at present in use under the tuberculosis scheme, but not fully occupied, might possibly be utilized for this purpose.

Schools for Mothers, etc.

It is pointed out that the term "Schools for Mothers," which has been somewhat loosely applied, properly means classes in which mothers are taught such branches of domestic work as make for the improvement of their home conditions, giving better surroundings and feeding. Among the extension classes under the supervision of the School Board are courses of instruction to mothers in cookery, dressmaking, sick nursing, laundry work, and the like. In one year 679 women attended, and 403 of them earned the return of their fee through their constant and satisfactory attendance. Under the scheme this work would be left in the hands of those who were doing it so well. Further, the voluntary health visitors attached to the Public Health Department have recently, with the co-operation of the Insurance Committee, been carrying out an extension of this work; they have been giving cooking instruction in the homes of the people, and no fewer than 1,500 women have thus received instruction. The question of supplying food to nursing mothers and milk for infants is a debatable one; but the scheme suggests that the M.O.H. should have power to grant suitable supplies of nourishing food to authenticated necessitous cases.

Staff for and Method of Working the Scheme.

For some years there have been in the city 300 lady voluntary health visitors, with one official visitor, who have visited the homes of newly-born infants, and continued their visitation for the first year. This work (with the consent of the visitors) would now be merged in the larger scheme; but additions would require to be made to the staff. It is suggested that a woman doctor, acting under the M.O.H., should be appointed to supervise the whole work of the scheme, and to be responsible for the clerical work, including the keeping of records. She would also exercise supervision over the midwives practising in the city (a duty at present imposed under the Midwives (Scotland) Act on the M.O.H.). Two female clerks and three female district visitors (having special qualifications in nursing, midwifery, etc.) would be required, along with six district nurses. It is proposed to divide the area of the city where visitation is most necessary into three districts, for each of which there would be available for work 100 lady voluntary health visitors, one female district visitor, and two district nurses. Notifications of births, when received at the Public Health Department, would be considered in order to determine whether the cases were suitable for official visitation, as it is desired to safeguard the interests of the medical practitioner in his relationship to his patients. In suitable cases a female official visitor would, after making a preliminary inquiry, pass the case on to the care of the voluntary health visitors, who would continue to exercise periodic supervision. In all cases requiring medical advice the visitor would give a card for presentation to the private medical attendant, or, if unable to procure such, to the recognized centre of that particular district.

The whole scheme would work out as follows:

1. The duty of supervising the execution of all the details of the scheme would devolve upon the medical officer of health.

2. The additional official staff necessary would include one woman doctor, two female clerks, two female official visitors, and six district nurses.

3. Certain already existing institutions would be included in the scheme for the satisfactory working of it, and these would carry out work among women and children of a curative and preventive nature.

The institutions under the heading of "Curative" were the Royal Maternity Hospital, the Royal Hospital for Sick Children, and several named dispensaries. In each of these outdoor clinics for the benefit of mothers and children would be held twice weekly under the direct supervision of the physicians of the institutions.

(*a*) *Maternity Clinics.*—These would be open to all expectant mothers, who would attend at their own initiative or as a result of the advice given by the various visitors during the course of their daily visitation. The names of such expectant mothers would be registered at the various centres and such advice or treatment given to them as in the opinion of the physician was necessary. Their confinement, if the person was not insured or was unable to pay the fee of a medical attendant, would subsequently be supervised under the direct care of the physician to the institution or some representative approved of by him. For these services a special grant would require to be made. After the birth the mother would continue her attendance, if need be, at the maternity clinics, and should hospital treatment be necessary either before, during, or subsequent to confinement it would be duly arranged for at these centres.

(*b*) *Child Clinics.*—These, too, would be held at each of the centres enumerated twice weekly, and would be specially devoted to the care of infants and children between the time of birth and their attaining the age of 5 years. To these clinics the various official and voluntary visitors would send all children who appeared to require medical attention, if their parents had not a medical attendant of their own. (This detail in the scheme—namely, the separation of the infants from their mothers, for medical supervision, at the time of birth—has already been criticized.) Records would be kept at each centre regarding the conditions from which each child suffered, and for which it was treated. These records would pass between the various centres and the Public Health Department, and would be retained until the child reached 5 years of age, in order that it should be possible to hand a completed record to the School Board when the care of the child was taken over by that body. The physicians of these named institutions would be responsible for the visitation of children under 5 years of age residing within the district of their institution for whom visitors under the scheme request their attendance.

All the medicines necessary for the treatment of mothers and children would be supplied free by the institutions.

4. A supply of milk would be granted free for the use of infants and food for nursing mothers on the recommendation of any of the physicians in connexion with these centres, and subject to the approval of the medical officer of health.

5. Grants would be paid to the institutions named under two headings: (*a*) to each institution in respect of arrangements made for clinics and for the supply of medicines, etc., (*b*) to the physicians in charge, in respect of their attendance on mothers and children at their own homes, situated within the prescribed area of the institution.

6. The official visitors would have the assistance of the three hundred voluntary lady visitors who had already been identified with work among infants for some years. The city would be divided into three districts, and each would have the services of one official visitor, two district nurses, and one hundred voluntary lady visitors. Visits would be paid to all homes in which a birth had been notified where no physician was in attendance or where subsequent attendance was considered necessary. These visitations would be made periodically in all cases until the child had attained the age of 5 years. Each visitor would be able to advise the expectant mother in regard to the particular clinic where she should register and at which she should apply for advice prior to confinement. Each visitor would also advise mothers in regard to the institution to which they should take their children for medical advice, if necessary, or, if this should be not necessary, in regard to the particular preventive institution available for them. It would be necessary to ensure that advice given to mothers was in all cases carried out, and for this purpose a system of cards would be adopted. One of these would be handed to the mother for presentation to the particular institution, would be duly initialled on presentation, and would be available to the visitor on subsequent visits as an indication that the child was receiving the needful medical attention. One of the district nurses would attend each outdoor clinic, would receive the

patients there who had been sent by the visitors, would keep a record of them, and by subsequently visiting the houses would ensure that the treatment prescribed was duly carried out. There would be little difficulty in keeping a record of the health conditions of each child, and this could be made the more complete by adding to it the infectious disease history of each case (information which was in the possession of the Public Health Department through the operations of the Notification of Infectious Diseases Act).

7. The various preventive institutions and agencies would be largely taken advantage of, and the visitors would keep these fully supplied by sending to them suitable cases. In the event of any child arriving at any of these and showing symptoms of illness in any form, it would at once be passed on to the particular institution under the scheme which is suitable for its treatment.

8. Weakly children and those convalescent from illness who were found in the course of ordinary visitation would be recommended for a term of residence in the country, prior to which they would in all cases be examined by the physician attached to the particular centre in the district where they resided.

9. The Royal Hospital for Sick Children and the Royal Maternity Hospital would be regarded as the main centres under the scheme; and whilst child and maternity clinics would be held at each institution respectively, they would be regarded mainly as institutions of a consultative nature to which the more complicated cases would be sent from the subsidiary institutions. In these also bed accommodation would be available for children and mothers requiring hospital treatment.

Cost of the Scheme.

An approximate estimate of the cost of the scheme was a little over £6,000.

Value of Scheme.

Whether or not Dr. Williamson is right in his comparative estimate of the value of this large child welfare scheme there can be no doubt regarding the new possibilities of preventive medicine of the most hopeful kind that it opens up. If it work satisfactorily it means nothing less than the sending of every child as it reaches the age known as "official five" out of the "pre-school" into the "school" period of its existence with all that is necessary to be known of its past medical history along with it. It carries, so to say, its record in its satchel; it appears above the horizon of the school doctor not as an unknown constellation, to use another metaphor, but as a star whose magnitude, movements, aberrations, and eccentricities have been ascertained. The boon which this will be to the school medical officer can hardly be calculated; for him or her to know what infectious maladies the child has had, what skin diseases, what eye or ear troubles, what indications of bodily or mental weakness, what signs of incipient capacity, is information of the highest value. There will also be the possibility of going back to prenatal conditions and linking on the state of the mother before the child's birth with the development of the child after it; it will be known whether he came into the world prematurely, post-maturely, or at exactly the right degree of maturity; and it will be possible to ascertain whether in the act of being born he suffered any injuries of a slight or a serious nature such as to lessen his chances of success—first, as a scholar, and later as a citizen of the nation.

It would be easy to criticize certain details in the scheme—one is a little dubious, for instance, as to the wisdom of putting so much of the initiative into the hands of the small army of voluntary lady health visitors—but *miror magis*, and one looks forward with great interest and expectation to the results as they begin to manifest themselves in a lessened infantile death-rate, in the setting free of school life from many of the ills which hamper and hinder its healthful progress, and in the building up of a stronger and more capable manhood and womanhood.

BASIS OF CALCULATION OF INCOME TAX.

Cash Basis.

We have received an inquiry from a correspondent which leads us to suppose that one of the points discussed in the article in last week's issue, p. 82, may require some further elucidation.

In the penultimate paragraph of that article some emphasis was laid on the fact that in present circumstances the Revenue authorities "probably gain tax on the 'cash basis' method of calculation," and it was suggested that it was rather surprising, therefore, to learn that in certain quarters pressure was being brought on practitioners to discard that basis of calculation contrary to long-standing practice and their own wishes.

The foundation of any argument on this question must always be that over a long period the total of the year's cash receipts will be substantially the same as the total value of the bookings for the same period. There will, of course, always be some book debts left over for realization, but, on the other hand, tax would be paid, on a non-cash basis, in the early years of a new practice, which might constitute a fair set-off to this consideration. But while this is true, it does not hold good for each particular year. For instance, if during, say, 1915, the work to be done falls off, the value of the bookings will show a corresponding diminution, but the cash received in that year will, for the greater part, be paid in respect of the previous years and will not be affected by the restriction of the practitioner's professional activities during 1915. This is the condition probably of many practices in this country at the present moment, provided that any army pay be treated, as it should be, as an entirely independent matter.

Now the Finance Act, 1914 (Session 2), gave a special right of adjustment to persons whose earnings had been adversely affected by the war. This relief has been discussed more than once in these columns, and it will be sufficient here to state briefly that where the practitioner is in naval or military service he can pay on the actual income of the year instead of on the three years' average, and that where he does not comply with that condition he can put the average period forward twelve months. But this relief is merely an adjustment of an assessment properly made on the statutory average, and does not affect future years in any way. In the latter case, therefore, the "lean years" will appear in the three years' average *four* times—namely, once on adjustment of the assessment, and then three times as a component part of the ordinary average. Where the relief extends to payment on the "actual" income, its effect is clearer, and we propose to deal more particularly with this case, remarking that the principle involved is the same, and that the difference between the two forms of relief is merely one of degree. Let us assume that the following profits are earned, and that the military pay and allowances have been excluded:

Years.		Basis of Bookings.		Basis of Cash Receipts.
		£		£
1912	... ...	1,050	... ...	1,050
1913	... ...	1,050	... ...	950
1914	... ...	900	... ...	1,000
1915	... ...	700	... ...	800
1916	... ...	600	... ...	700
1917	... ...	1,000	... ...	800
	Total ...	5,300	... ...	5,300
1915-16	Assessed	1,000	Assessed	1,000
	Reduced to	700	Reduced to	800
1916-17	Assessed	883	Assessed	917
	Reduced to	600	Reduced to	700
1917-18	Assessed	733	Assessed	833
	Not reduced		Reduced to	800

Assuming that the military service ceases in 1917, the assessment for 1918–19 would be £767 in either case, and for the two following financial years the cash receipt basis would give the practitioner some advantage. Nevertheless, it is clear that, on the whole, the benefit has been to the Revenue authorities, for they had the full advantage of the excess of the cash receipts over the value of the bookings in the lean years, whereas now those years are beginning to disappear from the average altogether. To put the matter briefly, the statute gives special weight to the "lean" years, and, unless the cash receipts fully reflect the diminution in the profits of the practice, their adoption as the basis of an income-tax calculation must deprive the taxpayer of some portion of the full relief.

We have one further observation to offer, lest our readers conclude too hastily that the "cash basis," in spite of its convenience, should be discarded for the present. The financial exigencies of the times have probably had a substantial effect in retarding the payment of accounts and thus accelerating the fall in the cash receipts. After all, the whole question is one of a comparison; if "bookings" are diminishing at a quicker rate than cash receipts—and in general we believe that to be the case—then the Revenue gains the advantage, but conditions vary according to the nature and locality of practices, and no general conclusion in this matter can be of universal application.

British Medical Journal.

SATURDAY, JULY 22ND, 1916.

STATE PROVISION FOR THE TREATMENT OF VENEREAL DISEASE.

A NOTE on the regulations made by the Local Government Board on July 12th for the provision and treatment of venereal diseases, and on the circular letter to councils of counties and county boroughs, and the memorandum of the medical officer on the organization of medical measures, is published at p. 111. The action thus taken is the sequel to the report of the Royal Commission on Venereal Diseases issued on March 2nd last. The general idea of the scheme shadowed forth by the Board is to provide free for all persons the best means of diagnosis and of treatment, in accordance with the recommendations of the Royal Commission, which were heartily approved by the medical profession, and have already commanded a large measure of public support. The schemes which the Local Government Board requires the county councils at once to proceed to elaborate (for the regulations came into force on the day they were promulgated) are to centre round existing pathological laboratories and general hospitals, particularly such hospitals as are the centres of instruction for medical practitioners and students. In its choice of institutions a county council is not limited to its own area; provided the places chosen are convenient of access to dense areas of population it has a wide range of choice. Arrangements are to be entered into by the medical officer of the council with the most convenient institution, and the cost of the work will be met as regards 75 per cent. out of imperial funds and for the rest out of the local rates. The institutions which contract to do the work are to remain autonomous—"the council should make it clear that no interference with the internal administration of the institutions is proposed"—but will be required to fulfil the essential conditions as to treatment and to make returns relating to cases treated. The clinics are not to be designated as for venereal diseases, and nothing is to be done to distinguish from others the patients who attend for the treatment of these diseases.

A strong point is made of the necessity for associating the local general practitioner with the actual work of treatment. "The Board consider that every patient . . . may properly be asked whether he has a doctor of his own, and whether he is willing to be treated by that doctor. If the patient has no doctor . . . he should be advised to choose a doctor who would co-operate in his treatment." The facilities for diagnosis at the laboratories are to be free to all doctors in the area; the work at the clinic is to be open to all medical students and doctors, and consultations may be arranged for the doctors' patients thereat. The desire is to make these clinics places of post-graduate study, so that there may be secured a speedy dissemination of the latest knowledge of the means of diagnosis and treatment amongst the profession.

The councils are informed that for the purpose of disseminating information as to the scheme, and for making suggestions to the council, "it will be desirable" that a committee should be formed containing representatives of social and public health workers, including a sufficient number of "suitable women," together with "representatives of the Local Medical Committee for the county or county borough." Further, the council is advised to instruct its medical officer to consult the Local Medical Committee for the area from time to time as to the means by which the fullest possible use can be made of the facilities provided under its scheme.

It is always desirable, when drafting a document for public information and instruction, in the first place to define the terms used, and if those who drafted the documents now issued had taken this elementary precaution not a little loss of time and uncertainty would have been saved to those who have to interpret their provisions. In the first place, throughout the circular of the Board and the memorandum of the medical officer, and even in the regulations themselves, the phrase "salvarsan or its substitutes" is used. Neo-salvarsan and galyl are alternative drugs differing in composition from salvarsan, and kharsivan and neo-kharsivan, now manufactured in England under licence from the Board of Trade, are not substitutes for salvarsan and neo-salvarsan, but the same substances made in British instead of German factories. It is quite possible that a better drug, not less effective and safer in use, than salvarsan may be discovered, and there are those who consider that such a drug is already to be found in galyl. In the next place, the meaning of the term "local medical committees" is not defined. To most readers it will convey the impression that the committee of that name constituted under the Insurance Act is intended, but others will interpret it to mean a voluntary committee, and in that case believe it to refer to the committees of the Divisions and Branches of the British Medical Association. In the third place, the county council is not required to set up the nameless committee which is to disseminate information and make suggestions, and the powers of this committee, if it be set up, are wholly undefined. The degree of its influence will probably vary very much in different areas. As a rule, the county council will, no doubt, turn over the whole matter to the Public Health Committee, as has already been done by the London County Council.

The Council of the British Medical Association has lost no time in formulating a number of recommendations to be considered by Divisions and the Representative Meeting with regard to the measures proposed to be taken, and a joint committee of the Medico-Political, Public Health, and Hospitals Committees in drawing up these recommendations had the advantage, through the courtesy of the President of the Local Government Board, of seeing drafts of the regulations, circulars, and memorandum which the Board has now issued. The Board lays stress on the importance of enlisting the co-operation of general practitioners, which was considered so essential by the Royal Commission, and it is to be regretted that it has not seen fit to attempt to enlist that co-operation by awaiting the deliberation of the coming Representative Meeting, as a delay of a little over a fortnight would have been amply justified.

On comparing the instructions given by the Board to county councils with the recommendations of the Council of the British Medical Association, it will be seen that to a considerable extent they are in accord, but in at least one important respect the Local Government Board has practically ignored the opinion, specially communicated to Mr. Long, of the Council of the British Medical Association. In its

Supplementary Report (SUPPLEMENT, July 8th) that Council said "it was pointed out to the Board that it was considered essential, if the new scheme for dealing with venereal disease is to receive the hearty co-operation of the profession, that the local medical profession should be asked to nominate representatives to serve upon any committee having control of the arrangements under the local scheme." The recommendation of the Board, that medical officers of health should from time to time consult the Local Medical Committee, does not meet the requirements which the Council of the Association has stated with studied moderation. The profession has already some experience under the Insurance Act of what "consulting the local medical committee" means in practice, and what makes the matter worse is that that committee is to be consulted, not as to the drafting of the scheme, but only as to the best means of carrying it out after it has been fully arranged. The Representative Meeting of 1914 expressed the opinion that in any future developments of the medical service under the Insurance Acts the clinical arrangements should not be placed under the public health authority, but either under a new clinical authority composed of representatives of the insurance, public health, and education local authorities, with representatives of the Local Medical and Panel Committees and of the local hospitals, or under the Insurance Committees strengthened for this purpose by the addition of representatives of the above-named bodies. The proposals now made for dealing with venereal disease affect the whole population, and will affect a large number of insured persons and every panel practitioner. The inclusion of the public health authorities will introduce a complication into the working of the Insurance Acts which many will consider most undesirable.

Again, it cannot be said that the Local Government Board has in any way solved the difficulty, which counts for so much with persons suffering from venereal disease, of maintaining absolute secrecy as to the nature of the disease. The Board rightly insists on the necessity of not divulging the names of patients, and urges that the clinics shall not be specially designated as for venereal disease, and that nothing shall be done to distinguish a patient who attends for treatment of these diseases. As special medical officers are to be in charge of venereal diseases, and not only students but general practitioners are invited to attend the clinics, it is difficult to see how it can be possible to avoid such an amount of separation and discrimination of patients as will make patent to every one present the general character of the disease for which these persons are seeking treatment. Unless far more effective measures are taken than those mentioned in the documents before us to prevent such publicity it is at least questionable whether any great number of persons affected with venereal disease will take advantage of the clinics.

The provision in the regulations that every medical practitioner, without cost to himself or his patient, should be enabled to obtain a pathological examination of materials from patients suspected to be suffering from venereal disease, is excellent, for the Wassermann test, and even the detection of spirochaetes and gonococci, may best be done in a properly equipped pathological laboratory. But the restrictions as to the supply of "salvarsan and its substitutes" will undoubtedly be severely criticized. The Council of the British Medical Association agrees that there should be some safeguards as to the use of these drugs, and that some discretion should be given to medical officers of clinics, but to give these medical officers full power, without appeal, to discriminate as to which general practitioner shall be supplied and which shall be refused a supply is practically tantamount to giving them power to mark out certain practitioners as competent and others as incompetent to treat venereal disease. General practitioners will be apt to resent the frequent insinuations in the circular and memorandum of the Local Government Board that so many of them are incompetent not only to use kharsivan and its congeners, but even to collect material for the pathological examinations.

If the scheme is to have the hearty co-operation of general practitioners, without which it will inevitably fail, they deserve and must have a greater share in the arrangements and a fuller recognition of their ability and readiness to help in the great campaign against venereal disease.

WAR FINANCE AND TAXATION.

As the Finance Bill was read a third time and passed by the House of Commons on July 17th, it may be convenient to deal here with the most important points discussed in the recent debates.

We omit from consideration the questions argued in the House at some length in connexion with the excess profits duty, because important as all questions with regard to so heavy an impost must be, the medical profession as such is not affected by that duty.

As a whole the bill has undergone more alteration in minor matters than might have been expected, and has apparently occupied more parliamentary time than the Government had anticipated. Indeed, more than one member criticized the allotment of time for discussion of financial measures, and offered such decided opposition to the "speeding-up" of the later stages of the bill that the Chancellor of the Exchequer was constrained to urge the importance of rapid progress, on the ground that it was really very important that the borrowing powers which the bill granted to the Government should be immediately available, as the existing powers were almost exhausted and the rate of expenditure had risen to £6,000,000 a day. There is, of course, inherent in present circumstances a constant danger that topics unrelated to finance, but of the utmost national importance, may make an unforeseen call on parliamentary time, and thus dislocate the prearranged programme, but it is certainly regrettable that taxation proposals should not receive the amplest opportunity for discussion.

The chief point of recent controversy was the proposal to restrict the life assurance allowance, in order to prevent its use, or abuse, as a means of unfair evasion. That an evil had sprung up which needed immediate repression was admitted on all sides, but there was great divergence of opinion as to the means to be adopted and the extent to which the repression was to be carried. The original proposal of the Government was not acceptable to the House, but the alternative proposal subsequently introduced was finally agreed to after substantial amendment.

As the provisions finally stand they make a clean sweep of the allowance so far as super-tax is concerned, limit the operation of new policies—that is, those taken out since June 22nd, 1916—to the extent of 3s. in the £, but leave old policies untouched. Inasmuch as it is only incomes amounting to £3,000 and upwards that are liable to super-tax, policy-holders whose total incomes do not reach that amount are not affected by the proposals, except as regards any

new policies they might enter into; the "retrospective" nature of the alteration in the law, which was the chief bone of contention throughout, is restricted to the super-taxpayers who now lose the allowance altogether. The final settlement of this difficult and not unimportant question is, then, eminently reasonable; although the allowances cease for super-tax purposes they will hold good, so far as old policies are concerned, to the full extent of the income tax, so that as compared with the earlier proposals even the super-taxpayer benefits by an additional 2s. in the £ on his premiums.

A somewhat cognate matter arose in connexion with an application for special consideration to be given in those cases where any additional premium is being paid on account of war or war service abroad. It has now been provided that the existing limitations —for example, that the allowance on a policy shall not exceed 7 per cent. of the actual capital sum assured—shall not apply to such "war insurance premiums." This is a "concession" so eminently reasonable that it is not surprising that it should have been made readily and without opposition.

Another interesting point dealt with was that of affording relief, under conditions, from income tax chargeable on newly planted woodlands. Forestry seems admittedly to be a proper subject for national encouragement.

It may be convenient to mention here the points on which those who have sent in their returns already for tax purposes should make sure that they have complied with new requirements: (1) Those whose incomes do not exceed £3,000 from all sources should have made a declaration of total income. (2) This declaration should show the unearned income separately in order that the rebate on that portion of the total may be calculated, and, in accordance with the Chancellor's undertaking, allowed for from the tax due from the practitioner. (3) If the total income is between £500 and £700 the relief in respect of children, now due by reason of the raising of the income limitation to £700, should be claimed, presumably through the surveyor of taxes.

THE KITCHENER MEMORIAL FUND FOR OFFICERS.

THE appeal issued by the Lord Mayor of London on July 14th for the Lord Kitchener National Memorial Fund met with immediate response, and by noon on the following day £18,000 had been contributed; by July 19th the total had increased to £92,000, including a special gift of £50,000 from Mr. Fenwick Harrison. The desire is to raise a large fund, the income of which shall be devoted in perpetuity to providing for officers and men of the Royal Navy and Army (whether in endowed homes or in their own homes) who have been disabled and whose pecuniary circumstances preclude them from obtaining such attention and comforts as they need. A portion of the Fund will be immediately applied to equipping a home for disabled officers for whose assistance nothing of a permanent nature has yet been considered. In view of the fact that the officer of the future is likely to be, as a general rule, slenderly endowed, his welfare, especially in the evening of his life, must claim generous attention. The appeal points out that many of the admirable institutions recently founded will cease with the war, or with the conditions following the war, or with the succeeding generation, whereas the scheme of the Kitchener National Memorial Fund is both retrospective and perpetual. The scheme will thus fulfil the two conditions the promoters set before themselves—namely, that any memorial should be permanent and perpetuate Lord Kitchener's name for all time, and secondly, that it should be devoted to some object known to be near his heart. Those who knew Lord Kitchener best are in agreement that no subject was more constantly in his thoughts than the welfare of the King's Forces throughout the Empire. Queen Alexandra has become President of the Fund, and the council includes representatives of the Navy, the Army, and the Red Cross. The Lord Mayor is treasurer, and subscriptions may be sent to him at the Mansion House, London, crossed Bank of England; other communications should be addressed to Sir Hedley Le Bas, honorary secretary, Oswaldestro House, 34–35, Norfolk Street, London, W.C.

RESTRICTIONS ON THE SALE OF COCAINE.

IN the very nature of the case it is extremely difficult or practically impossible to gauge at all accurately the extent to which a vicious habit such as drug taking prevails at any given time, but there is good reason to believe that the restrictions on the sale of cocaine and some other drugs which have recently been imposed by an order of the Army Council have not come too soon. It appears that the armies now in training contain a number of persons addicted to cocaine sufficiently great to require that the matter should be dealt with very seriously. There may be several reasons for this state of things; now that every one of military age is compelled to serve, many neurotic and otherwise unsound individuals are swept into the ranks who would probably not be there of their own accord. The suddenly altered conditions of life which they encounter may lead such persons to look round for some artificial stimulant, and at a time when the facilities for obtaining alcohol are greatly restricted it is not surprising if cocaine has found favour to a considerable extent. Before the new order was issued there were already many difficulties in the way of obtaining this drug; as it is in Part I of the Poisons Schedule, it could only be sold by qualified pharmacists to purchasers known personally to them, or introduced by some other person known to them, and there is no reason to suppose that pharmacists have ever omitted to comply with these conditions. The new regulations refer only to sales to members of His Majesty's Forces; they do not, therefore, touch wholesale transactions, and do nothing to interpose new difficulties in the way of drug-taking by civilians. The restrictions attending the wholesale distribution of poisons are much less severe than those connected with the retail, and it is by no means difficult for persons intending deliberately to sell poisons illegally for improper purposes to obtain wholesale supplies, and as such persons carry on their retail transactions with secrecy, it will not be an easy matter to put a stop to their distribution of the drugs. The police, however, seem ready to act with vigour. At the instance of the Commissioner of Police for London a number of men have been charged with selling, or aiding and abetting the sale of cocaine to members of His Majesty's Forces, in contravention of the regulations above mentioned. The prosecuting counsel said that the drug was sold in small pill-boxes, and taken in the form of snuff. The majority of the accused persons appear to have been foreigners. Two were sentenced to three months' hard labour, and three others to two months' hard labour. In respect of three of the men sentenced deportation certificates were issued. Two other men, regarded as principals, were sentenced to six months' imprisonment and a fine of £100, with the alternative in default of an additional three months' imprisonment. A young woman, who said she was forced to sell the boxes by one of the two men, was sent to prison for fourteen days. The police are anxious for legislation, as the present regulations apply only to the sale of the drug to members of His Majesty's Forces, and it is understood that the Home Secretary intends to introduce a bill shortly. Prevention of the abuse is the thing to be aimed at, and it may be doubted, therefore, whether the rules governing the retail of cocaine even in the

drastically amended form imposed by the Order in Council will be sufficient to prevent the evil. It may be well therefore to consider what alternative means could be taken. Previous to the commencement of the war the production of cocaine was almost entirely in German hands. The total alkaloid of coca is usually extracted in factories near the places where the drug is collected in South America; this total alkaloid contains the other alkaloids naturally present besides cocaine, and also the benzoyl-ecgonine and ecgonine which are formed by decomposition of cocaine during the process of extraction. This crude alkaloid was imported by German firms and hydrolyzed, and the chief product of this process was ecgonine; the latter was then built up again into cocaine (methyl-benzoyl-ecgonine). At present the crude alkaloid is largely imported into this country and pure cocaine prepared from it in the same way. Ecgonine does not appear to be produced artificially at all; the source of the cocaine, therefore, is an imported product, although the cocaine itself is made in this country. From the moment the crude cocaine enters the country its commercial path might be recorded, and without undue interference with legitimate business it would be possible for Government officials to know exactly in whose hands all the cocaine in the country is at any given moment. It would not appear to be a difficult matter to ensure that in its wholesale distribution it should only go into the hands of pharmacists and medical men. It might be made illegal for any other person to be in possession of cocaine unless a satisfactory explanation could be given. Such legislation, if rigorously carried out, would prevent entirely the supply of the drug to those unscrupulous persons of whom some can always be found to engage in trading on the weaknesses and vices of others for the sake of the large profits which can so be made. The regulations here suggested are scarcely, if at all, more drastic than the recommendations in regard to morphine which were put forward two or three years ago by the Committee appointed by the Government to report on the whole question of trading in opium and morphine.

THE PREVALENCE OF SYPHILIS.

ALTHOUGH syphilis was long ago recognized by syphilologists as a cause of many morbid conditions of the nervous system and viscera, and strongly suspected of being an etiological factor in others, it was not till the application of serum diagnosis by means of the Wassermann and other tests became more general that the prevalence and etiological importance of syphilis became appreciated by the medical profession as a whole. Further evidence on these points is afforded by a recent research by Walker and Haller[1] of Boston, who have investigated the prevalence of syphilis among the ordinary cases presenting themselves at a general hospital by means of a routine examination by the Wassermann test. The technique employed was that of the original method, except that a 0.4 per cent. cholesterinized alcoholic extract of human heart was used as antigen. The number of patients examined was 4,000. A positive reaction was obtained in 487 cases with clinical syphilis, and in 113 others—namely, 54 with aortic disease, 10 with epilepsy, 10 with hepatic and 10 with renal disease, 9 with pneumonia, 7 with diabetes, and 13 with other miscellaneous disorders. In aortic disease, aortitis with aortic insufficiency came first and aneurysm next in order of frequency. Uncomplicated cases of arteriosclerosis only gave a positive reaction in two instances. Of special interest are the cases of epilepsy, in which the reaction was positive in 10 out of 71, or 14 per cent. These cases were relieved by salvarsan or mercury. Of 32 cases of cirrhosis of the liver 6 gave a positive reaction. One case of acute catarrhal jaundice gave a temporary and incomplete positive reaction, which became negative when the jaundice subsided. This is explained by the large cholesterin content of the bile. In 213 cases of chronic nephritis a positive reaction was given by 10 only, or 4.7 per cent. This does not support the theory that syphilis is a frequent cause of chronic nephritis. In the cases of pneumonia which gave a positive reaction there was evidence of previous syphilitic infection. Out of 89 cases of diabetes mellitus 7 gave a positive reaction, or 8 per cent., and in most of these there was a history of syphilis. Among the miscellaneous cases were three of special interest. Two of these showed symptoms of gastric ulcer; one was operated upon without any definite ulcer being found; the other cleared up under antisyphilitic treatment. The third case was one of colitis, and also cleared up with the same treatment. The authors found that the common infective diseases, such as enteric fever, scarlet fever, pneumonia, and tuberculosis, had no influence in causing a false positive reaction. As the result of their investigations they conclude that among patients applying for treatment at a general hospital cases of unsuspected syphilis are much more numerous than those frankly syphilitic.

[1] *Journ. Amer. Assoc.*, February, 1916, p. 488.

GALYL IN SYPHILIS.

IN the new number of the *Journal of the Royal Naval Medical Service* Staff Surgeon S. F. Dudley, M.B., R.N., gives his experience in the use of galyl, which has replaced neo-salvarsan as a routine treatment of syphilis at the Royal Naval Hospital, Chatham, since November, 1915. About 1,500 intravenous injections of the drug have been given, and the earlier experience with neo-salvarsan was also large. The routine followed was to give an intravenous injection of one or other of these arsenical preparations as soon as the diagnosis was made, and to repeat it twice at monthly intervals, with three injections of mercury (1 grain) after each intravenous injection. The patient attended at the hospital for the injections, and was seen by the surgeon at the start of treatment; one month later, when he had had one dose of galyl or neo-salvarsan, and three doses of mercury; and two months after the start of the treatment, when he had had two injections of an arsenical compound, and six doses of mercury. Part of the routine is to test the Wassermann reaction on each of these three admissions to hospital, but this section of the inquiry is not completed, as only about a third of the cases treated by galyl had been under observation long enough to be subjected to a third dose; so far as the results went, they were in favour of neo-salvarsan, which also caused a more rapid disappearance of the treponema in the lesions, though the number of cases observed was probably not large enough to settle the point. Salvarsan, which is now manufactured in this country under the name kharsivan by licence of the Board of Trade, is di-oxy-diamidoarsenobenzene bi-hydrochloride, and contains about 34 per cent. of arsenic. Neo-salvarsan, manufactured under the name of neo-kharsivan in this country, is sodium di-oxy-diamidoarsenobenzene-mono-methane-sulphonate, and contains 31.2 per cent. of arsenic. Galyl, a still more complicated compound, is tetroxy-diphosphamino-diarsenobenzene, and contains 35.3 per cent. of arsenic. As the dose of galyl used was 0.4 gram there was just half as much arsenic in it as in the dose used of neo-kharsivan, 0.9 gram. The conclusions drawn by Staff Surgeon Dudley are: (1) Less reaction is to be expected after galyl than neo-salvarsan; (2) the majority of reactions after intravenous injections of either drug are due to the liberation of the spirochaetal endotoxins; (3) galyl has slightly less effect on the Wassermann reaction than neo-salvarsan; (4) the treponemacidal action is a little slower; (5) a dose of galyl, 0.4 gram, is not quite equal to a dose of neo-salvarsan, 0.9 gram, in the cure of syphilis. It is suggested that the interval between the injections of galyl should not be so long as between those of neo-salvarsan. The long interval is designed to allow plenty of time

for the patient to get rid of the arsenic as a safeguard against cumulative poisoning following a second or third dose, but the dose of galyl contains only half as much arsenic as the dose of neo-salvarsan, and to get a therapeutic effect equal to that produced by the latter drug the injections of galyl should probably be repeated within a fortnight of each other. If three doses of galyl were given at intervals of ten days, it is possible that as good a curative effect would be obtained with it as with neo-salvarsan under the existing routine, and this plan would have the additional advantage of only keeping men three weeks waiting at the dépôts or elsewhere to complete their galyl course instead of nine weeks, as at present. The general effect of the study given to the subject is that galyl is a very safe, useful alternative to neo salvarsan or salvarsan, but that, owing to its small arsenic content, it should be used more frequently than the older drugs to get its full curative effect.

THE CONTROL OF YAWS.

THE control of yaws is a very important matter for many of the West Indian islands where the disease abounds. In the issue of the JOURNAL for July 15th a very interesting discussion on this subject at the first meeting of the Grenada Branch of the British Medical Association was reported. The President, the Hon. E. F. Hatton, Colonial Surgeon, in introducing the subject, stated that isolation for the disease had now been tried for forty years without any beneficial results. It is open, of course, to doubt whether the degree of isolation possible in the circumstances has been really strict isolation in the proper sense of the term; but nevertheless, just as in the case of syphilis, a proper and effective treatment of each individual infective case may ultimately prove to be the best method for limiting the disease. Yaws is due to a spirochaete, the *Treponema pertenue* Castellani, very like the parasite of syphilis. It is not a venereal disease like the former, the parasite gaining its entry by cuts, abrasions, or other breaches of continuity of the epithelium. The close personal contact in which natives in the West Indies and other parts of the tropics live renders infection in this way very easy. The analogy to syphilis is seen again in the fact that salvarsan is a specific for both diseases. In the old days patients used to have to stay four months or more in hospital until cured of the disease, but now definite disappearance of all lesions may be brought about by one or two injections, the cure even of deep tertiary ulcers often being completed in as short a time as three weeks. In many instances a single injection is apparently sufficient to sterilize the patient, and if after that a relapse takes place then a second injection is required. As soon as all superficial lesions have disappeared there would seem to be little chance of the patient being able to transmit the disease to others, so that the importance of this method of treatment is self-evident. There seems to have been some difficulty in getting salvarsan since the war began, but as there are now English and French equivalents this difficulty should disappear. Kharsivan, or neo-kharsivan (English), galyl (French) will act equally well, and there is therefore no sufficient reason for abandoning the treatment, even temporarily, in the West Indies. Once the people can be made to realize that this treatment is efficacious they will readily go to the dispensaries for it, and there is little doubt that the main feature in any campaign for stamping out, or at least in greatly mitigating, this scourge in Grenada and the other West Indian islands is to attack the foci of infection.

THE DOCTOR AS PATIENT.

DOCTORS have the reputation of being bad patients. Some hinder the healing work of Nature by nervous watching of their symptoms, which their condition makes them incapable of interpreting correctly; some attempt to interfere with the treatment; others, again, are refractory, and allow themselves an independence which they would not tolerate in a patient. Desgenettes, physician in-chief to the French armies in the East under Napoleon, was an example of the last class. He fell ill of typhus, and Masséna, who was very fond of him, had him transferred to head quarters. The general in turn fell ill, and Desgenettes directed the treatment from his sick-bed, insisting on blind obedience from his chief while he delayed his own recovery by all sorts of indiscretions. Masséna, losing patience, placed a guard about him to see that the treatment was strictly carried out. When convalescent, the insubordinate physician was sent to Nice under the escort of a brigadier of gendarmerie, who had orders to keep him in the strait path of medical discipline. It is deplorable to have to relate that on the journey Desgenettes attempted to corrupt his escort by asking him to share a present of partridges and old wine received from a too-generous Italian confrère. The gendarme indignantly refused, reproaching Desgenettes for his gluttony, and declaring that it was a disgrace for a physician-in-chief to do a thing for which a simple soldier would be severely punished. We are sure that Desgenettes, who was a man of generous nature, took the reproof in good part, and recommended his faithful escort for promotion. But as he was also a strong-minded and self-willed man we confess that we are doubtful whether he mended the error of his ways in the matter of régime.

BONE GRAFTING.

A DEMONSTRATION on bone-graft surgery was given by Dr. Albee, of New York, at a meeting of the Surgical Section of the Royal Society of Medicine on July 12th, Sir Frederic Eve being in the chair. A series of lantern slides were first shown, illustrating the growth of bone grafts in the various conditions in which they may be usefully employed, such as Pott's disease, ununited fractures, and fracture of the neck of the femur. *X*-ray plates were shown on the epidiascope, illustrating how rapidly these grafts become incorporated, and gradually increase in size and strength until they ultimately take on not only the function but even the structure of the bone they are intended to replace. The technique of the operation was next described and the importance of obtaining all the elements of the bony structure in the graft emphasized—that is, periosteum, bone substance, endosteum, and marrow. The second part of the demonstration consisted of the exhibition of cinematograph films showing the actual operations performed by Dr. Albee. Dr. Albee explained that in America of late years a series of films had been taken showing the various operations of surgery as performed by experts, and that these films were lent out on hire to the various medical societies throughout the country. These pictures are taken with the lens of the camera at short range, and include only the operation field, without showing unnecessary details. By special lighting arrangements the obscuring effect of the blood is minimized, and everything from the first incision to the application of the final dressing could be followed with the greatest ease. The impression gained was that there was a great future for the cinematograph in the teaching of operative surgery and technique in all its branches. A short description of one of Dr. Albee's operations may prove of interest. A film was shown illustrating the treatment of a case of ununited fracture of the tibia. Prior to bone grafting the case had been treated by the application of a metal plate without success; sinuses had formed, and a definite sequestrum could be demonstrated by *x* ray. This condition was treated in two stages: the metal plate and sequestrum were first removed and the wound plugged; after an interval, when the wound had firmly healed, without, however, any union in the tibia taking place, the seat of fracture was exposed by turning out a flap and the fibrous tissue removed between the fragments of the bone. The next step in the operation consisted in the removal of a strip of bone some ½ in. in breadth and about 5 in. long from the two fragments; that is to say, a

gutter was cut in each, extending upwards and downwards on either side of the seat of fracture for the distance of about 2½ in. This was done with his electrically driven double saw illustrated by Lieutenant-Colonel Robert Jones in his paper published on July 1st (p. 3); it consists of two circular saws set on a central axis, so that a long strip of bone of the same width throughout its length is removed. A stream of saline is allowed to flow on the saws to prevent over-heating. In this way a bed was formed for what is known as an inlay graft. The graft was next cut with the same saws from the other tibia, so that a strip of bone was procured consisting of the four elements of the bone, and accurately fitting the bed already prepared for it. This graft was fixed in position by strong kangaroo tendon sutures, which are passed through holes drilled by the motor on either side of the gutter. The tendons are threaded through from one side of the gutter to the other, and are then pulled up from the gutter in the form of loops, under which the inlay graft is forced into place, and the tendons are then tied over it. It seems probable that the value of bone grafting in the treatment of ununited fractures will be more and more appreciated, especially for dealing with those fractures in which there has been great destruction of bony tissue, leaving an inch or more separation between the fragments. Dr. Albee mentioned cases in which a successful result had been obtained even though the graft spanned an area where active tuberculous disease was present, the essential being that the graft should have a good contact with healthy bone at either extremity. Dr. Albee's electrical apparatus is of great ingenuity, the outstanding feature being that the tools are driven from a motor in a sterilizable casing in the operator's hand. This lends itself to accuracy, and greatly adds to power.

WE greatly regret to have to record the death, at Amara, on the Tigris, of Sir Victor Horsley in his 59th year. He became a member of the staff of the 3rd London General Hospital with the rank of captain in 1910, but in May, 1915, was placed in charge of the surgical division of No. 21 General Hospital, with the temporary rank of major. The hospital embarked for Egypt on May 14th, 1915. In July, 1915, he was appointed a surgical consultant with the temporary rank of colonel, A.M.S., and proceeded to Mesopotamia from Egypt in March, 1916. We hope to publish a biographical notice in our next issue.

THE Commander-in-Chief's Special Order of the Day, quoted in the JOURNAL last week, expressing his high appreciation of the efficiency of the arrangements for dealing with the medical aspects of the battle of the Somme, has been read with great satisfaction by the medical profession, but we made an error in describing the manner in which it was issued. The Order was addressed personally to the Director-General, Sir Arthur Sloggett, and by him repeated to the Deputy Directors of Medical Services for transmission to all medical units. The Order was issued on the fourth day of the action; the medical organization has continued to respond splendidly to the prolonged tests to which it has since been subjected. The way in which all ranks are working is beyond praise.

THE treasurer of the Royal Medical Benevolent Fund, 11, Chandos Street, Cavendish Square, W., gratefully acknowledges the receipt of four large donations to the Emergency Fund in response to the appeal:

	£
Dr. A. Whitfield	100
Miss Helen Hall	100
Sir John Tweedy (President)	100
Mr. Hurry Fenwick and friend...	100

At the meeting in the month of May the committee had a balance of only £27 0s. 1d., in June a deficit of £16 3s. 5d., and in July a balance of £24 13s. Grants in relief were made in May of £197, in June of £190, and in July of £280 15s.—£667 15s. in all—the amount expended thus exceeding the receipts by no less than £632 5s. 4d. The need of liberal and immediate relief is obvious.

Medical Notes in Parliament.

Board of Education.

THE vote for the Board of Education was moved by Mr. A. Henderson on July 18th. The estimated expenditure, he said, had risen from £14,320,859 in 1911–12 to £15,186,732 in 1916–17. The chief economy effected had been through the exclusion from elementary schools of children under 5 years, which he seemed to regard as a somewhat doubtful advantage, pointing out that though a good home was the best place for children under 5, yet when the mother could not attend to them—and the number of women in employment had greatly increased—it was better that they should be at school. It was estimated that there would be a decline in the attendance for 1916–17 to something less than 1 per cent., due, among other things, to the declining birth-rate, but also the extension of the employment of children at an earlier age. This extension had taken place chiefly in agriculture. The concessions giving extension had been abused by certain local education authorities, and the Board was determined to do all in its power to prevent any further abuse. Since the trade boom which followed soon after the outbreak of war, the number of free meals to children had been reduced; but many authorities in poor areas had availed themselves of the permission to provide meals for school children during the holidays, with marked benefit to them. The estimates provided £100,000 for this purpose, and £22,000 for schools for mothers. The estimate for medical inspection remained unchanged at £200,000. Medical inspection included the treatment particularly of teeth, eyes, throat, and skin; 350 school clinics were in existence, and 75 authorities had made arrangements with hospitals, and contributed accordingly. In recent years the arrangements had become increasingly efficient. Down to March, 1915, the school medical service had remained practically unimpaired, but by March, 1916, no fewer than 300 out of the 850 school medical officers had joined the forces. So far the Board had succeeded in maintaining the minimum of treatment hitherto given and the careful inspection of children who appeared to be ailing. Any further release of medical officers would in some areas involve the total abandonment of the school medical service, and this could only be regarded as deplorable. Speaking on the general subject of the reorganization of national education, he recalled the fact that before the war the then Government were taking the first steps to effect such a general reorganization. The war had brought home to everybody the knowledge that national prosperity and security demanded greater concentration of trained intelligence on problems of industry, of commerce, and of public administration. The Government was instituting a general inquiry, and, as part of it, committees had been appointed to investigate three branches of the subject: The first was as to the education of young persons after the war, with special regard to those who had been abnormally employed, those who could not find employment, and those who required further training. Extension and reorganization was required to secure closer co-operation and continuity between the elementary schools and the colleges through technical, continuation, and secondary schools. It was to a large extent an economic problem, which could not be solved on educational lines, but an endeavour should be made to secure that when the child was capable and the parent willing means should be found for continuing the child's education. Two other committees appointed were to inquire respectively into the position of science and modern language teaching; the teaching of science must in the future become a greater feature of the educational system—not specialization upon any single branch, but a more scientific temper in all branches of education, in history as well as in chemistry. Larger facilities were needed for scientific teaching and research, and the claims of physical education should be recognized to a position, not of exclusive privilege, but equality in the curriculum of schools, and as a qualification for the public service.

Sir Philip Magnus, who followed, expressed regret that some of the evening technical schools had been closed, believing that they conferred a great advantage on the rising generation. He hoped that science masters would in future be regarded as being in an equal position with classical masters, with the same opportunities of advance-

ment and adequate salaries. Turning, then, to the committees of inquiry proposed, he said that the Board did not seem to understand what the public wished. It was not a series of committees appointed by the Board, but an independent tribunal before which the officials of the Board should appear as witnesses rather than judges. It was not desirable that the Board of Education should get too firm a grip on educational activities. One of the objects of an independent inquiry should be to put the relations of the Board with the local authorities on a more satisfactory footing. The time had come for the reconsideration of the organization of the Board of Education itself. Sir James Yoxall deprecated the introduction of German methods into this country. Mr. Ramsay Macdonald suggested the appointment of a Royal Commission to inquire into university education as a first step. Sir H. Craik questioned the value of commissions, and said that the first principle should be simplicity in the curriculum, and the second to leave initiative to the school.

Duty on Alcohol for Hospitals.—In reply to Sir P. Magnus, the Chancellor of the Exchequer said on July 17th that the Committee appointed to consider the question of relieving hospitals from the payment of duty on alcohol used for the purposes of the hospital had made a report which was now receiving consideration; it was hoped to come to a decision on its recommendations immediately.

Mental Deficiency Act.—In a written reply to Mr. Astor, Mr. Samuel stated, on July 11th, that the total number of local authorities under the Mental Deficiency Act, 1913, was 125, and 87 had submitted schemes. Other local authorities had been urged to carry out the important, but comparatively inexpensive, duties of ascertaining the number of defectives for whom they are responsible, and of providing supervision and guardianship where required. The restriction of capital issues during the war prevented local authorities from purchasing land or buildings, but the Board of Control had suggested that provision for urgent cases should be made by (*a*) leasing and adapting existing buildings, where this can be done at little cost; or (*b*) entering into contracts with the managers of existing institutions; or (*c*) applying for the approval under Section 37 of the Act of suitable portions of Poor Law premises. The local authorities for Middlesex, Lancashire and Mid-Yorks had provided accommodation for 322 persons, and proposals from Bradford, Leicester, London, and Sheffield, which would provide accommodation for 252 persons, had been approved, or would probably be approved. The number of institutions and homes provided by religious and philanthropic associations and by individuals was 54, giving accommodation for 3,808. In addition, nine hospitals and institutions formerly registered under the Idiots Act had been certified under the Mental Deficiency Act, and provided accommodation for 2,526 defectives. Twenty-six Poor Law institutions (not certified institutions) appointed under Section 37 provided for 1,233 cases. Sixty-six local authorities were sending persons to institutions mentioned above, the number down to June 30th being 1,361. In addition 75 had been placed under guardianship.

War.

Mesopotamia.—The most important passage in Mr. Asquith's statement in the House of Commons on July 18th with reference to Mesopotamia was that in which he said that transport seemed to be the weak point and the pivot of all the various troubles which had arisen. He excused the breakdown on the ground that the expedition first sent consisted of two divisions only. It was at first brilliantly successful, but in consequence of the reverses subsequently encountered, and in particular the beleaguerment of General Townshend at Kut, the expedition was increased to seven divisions, and the urgency of relieving General Townshend was such that it was thought right to push the troops on ahead apart from their transport. Two inquiries into transport had been made, one by Sir G. Buchanan, an expert in river navigation, who was sent to Mesopotamia early in the year by the Government of India, and the other by General Gilmour, sent out by the War Office in March to examine not only the question of the river, but of the railway transport, and of the facilities for it and the means of accelerating its completion. Though the Government was not satisfied, it was quite convinced, in consequence of these careful examinations from these different points of view on the spot, that the imperfections of transport were being largely remedied and would soon, so far as local circumstances permitted, completely disappear. With regard to the provision for sick and wounded soldiers, Sir John Nixon, the general then in command, had at the end of last November, after the action of Ctesiphon, in a report made to the Secretary of State for India from Basra, stated that in his opinion the medical arrangements had been quite satisfactory. In the next two months statements of an unofficial character were received from various sources, which seemed to point to a very different state of things, and in February the Government of India appointed a commission consisting of Sir William Vincent, General Bingley, and Mr. Ridsdale. This commission made an exhaustive examination on the spot during March and April; its report on the condition of things both at the base and at the front had now been received by the Government of India, but before transmitting it home that Government had asked the Commander-in-Chief in India, Sir Beauchamp Duff, to submit his observations. In reply to a direct inquiry by the Viceroy to the Commissioners as to whether any immediate action was called for in the conditions existing when they departed from Mesopotamia, they had stated that everything possible was being done. Surgeon-General O'Donnell, who was sent from France to India early in April, had made a report which showed that in some respects at that time there was still a shortage of necessaries. Every indication which he gave of a deficiency had peremptorily been required to be made good. It is unnecessary to report the numerous questions put after Mr. Asquith had sat down, because the matter both of Mesopotamia and of Gallipoli is to be discussed on Thursday, after this issue of the JOURNAL has gone to press, but we would direct medical attention in particular to the remarks Mr. Asquith made with reference to transport. Under the system by which the army is administered the Army Medical Service does not supply its own transport; it is, in fact, responsible only for personnel (surgeons, orderlies, and nurses) and for the supply of drugs. It must get its transport, trains, and ambulances on the lines of communication, and hospital ships and barges from other army departments, and its responsibility only begins after the transport has been provided.

Wounded from the Battle of Jutland.—On July 18th Sir A. Williamson asked a question with regard to the disposal of wounded after the battle of Jutland, which seemed to suggest that the wounded landed at a naval base in the North were sent by rail to Haslar and Chatham; that a number died on the long railway journey; and that there were, on the day in question, at least fifty beds vacant and held at the disposal of the military authorities within a short distance of the same naval base. He asked whether arrangements could not be made with the War Office to obtain temporary use of its unoccupied beds at the nearest suitable hospitals should such an emergency recur. The Parliamentary Secretary to the Admiralty replied that the condition of all the wounded landed after the battle of Jutland was carefully examined and only those sent away by rail whose condition justified that procedure. It was not the fact that any of them died, nor was it believed that any of them suffered injury. The arrangements made by the Admiralty would have enabled it, had it thought desirable, to have accommodated a larger number of patients in the neighbourhood of the landing places than were actually wounded. There was therefore no emergency such as seemed to be suggested. The policy adopted was that deliberately framed by the Medical Department of the Admiralty, partly in the interests of sound medical administration, partly for the convenience of men who preferred to be near their dépôts and their homes. He had not the slightest doubt that complete harmony reigned between the Admiralty and the War Office in this matter, and so far as these men were concerned there might be complete confidence in the Medical Director-General R.N. and his staff. Sir A. Williamson, in a supplementary question, suggested that an official at the Admiralty went to a hospital and asked whether the beds were reserved for the army, and when answered in the affirmative went away. The Parliamentary Secretary said that he would look into the matter, but it did not affect this particular case. Every possible care was taken, and there was no reason to complain in any way.

Transport Arrangements in India.—Major Astor, on July 17th, asked whether official reports had been received concerning the breakdown of the arrangements made in India for the moving of troops and drafts arriving from England. Mr. Chamberlain said that he had asked for a full report of the lamentable incident attending the recent movement of troops from Karachi. Meanwhile, he had taken steps to ensure that

troops should not be moved by rail from Karachi to Northern India under such conditions while the hot weather prevailed.

Medical Recruiting Boards.—In answer to Mr. Edmund Harvey, who inquired on July 17th whether attention had been called to the action of certain army medical boards in passing over medical evidence submitted by civilian medical men, the Financial Secretary to the Treasury said that the responsibility for the decisions taken by the recruiting medical boards rested with those boards, but they had been instructed to give due consideration to the medical evidence submitted by civilian medical practitioners regarding men who had been called up for service. He did not think that there had been any general failure to do this, but in view of statements which had been made attention had again been called to the point.

Taxation of Wound Pensions.—In reply to Mr. Malcolm, on July 17th, the Parliamentary Secretary to the Admiralty said that naval officers are taxed in respect of their pensions for wounds. He intended to discuss the matter further with the War Office and the Treasury.

Captains R.A.M.C.—In reply to Mr. Joynson-Hicks, on July 13th, the Financial Secretary to the War Office said that there were 254 regular captains R.A.M.C. who had held that rank since the war began. It was not proposed to make any permanent promotions in the near future.

THE WAR.

THE WOUNDED FROM THE SOMME.

ALMOST every day since July 3rd crowds have collected in the Strand, outside Charing Cross station, to see and cheer the removal of the wounded in the motor ambulances. How the crowds get to know that an ambulance train has come in to Charing Cross is not obvious, but of course a biggish crowd quickly collects in that part of London. A few days after each push a freshet in the stream may be expected. The number of arrivals, however, in the last week do not suggest that unless the forward movement is made to extend over a very much larger bit of the line than at present, the rapidity of the stream will be as great as at its first commencement within a day or two of the opening of the attack on July 1st.

Some of these early cases appear to have come on straight through from the casualty clearing stations, the ambulance trains on which they were placed at the casualty clearing stations having taken them straight down to ports where hospital ships were waiting. These hospital ships leave nothing to be desired in the way of appointments, and the staffs engaged on them are so competent in their duties that the severest cases travel with ease. The ships are fitted up for the performance of operations if required, but as the passages across are usually very short, and wounds are dressed just before patients leave the hospitals, nothing in the way of operative interference is usually necessary. Of course there is always the chance of some wounds starting to bleed afresh, and there are sometimes cases which are being treated by irrigation or fomentation.

There is therefore plenty of work for the doctors as well as for the nurses of a strictly professional kind, apart from that involved in recording the names of the patients and seeing that they are properly labelled according to the nature of their injuries and the hospitals to which they are consequently to go; as also in overhauling in advance all the machinery by which the patients are swiftly passed from ship to shore, and by which those who are thereafter responsible for them are duly posted in the nature of the cases.

The ambulance trains in France seem now very numerous, and to be mostly of the same type as those with which we are familiar in England. The number of coaches composing each train is, we believe, usually larger, and the rate of movement slower. From twelve to fifteen miles an hour seems to be about the average speed of a hospital train in France, and it is well that it should be no faster, since the permanent ways in France are less smooth, as a rule, than those of Great Britain. Another difference is that, whereas in Great Britain the movement and distribution of the trains are controlled from one of the ports, they are controlled in France by a special branch of the staff of the Director-General, Sir Arthur Sloggett. He has caused side lines to be brought almost to the doors of every casualty clearing station; when the loaded trains leave they go to a certain station, where they are turned in one direction or another as the progress of events demands, and the hospitals in the area for which they are bound are warned in advance as to the hours at which they may be expected. The whole thing seems exceedingly well managed.

The later batches of wounded include a certain number of patients who have reached the coast or port of departure in ambulance barges, of which a considerable number have been at work in the northern half of the British zone of operations for over a year; it appears that one of the preparations made by Sir Arthur Sloggett in anticipation of present events was to bring down a certain number of barges to work on the canals in touch with the southern armies. These barges are primarily intended for the reception and transport of abdominal and chest cases, and are very comfortable, but travel, of course, at a slow rate. It would appear from what late arrivals say, and the newspaper correspondents agree, that some of the more conspicuous successes of the past eighteen days, and notably the first bite at the enemy's third line, have been won at relatively small cost in killed and wounded. It appears also that the proportion of light cases continues to be large. By light cases in this connexion is meant a wound caused by a rifle or machine gun, or which for some other reason is not likely to endanger the patient's life seriously or incapacitate him for a very long period. All the hospitals, especially those in the provinces and at a distance from landing ports, report the proportion of such cases to be high.

But of course there are also many grave cases; bombing and artillery work seems to have figured more largely recently than in the opening days of the battle, and wounds thus caused always tend to be more serious on the whole than those caused by rifle and machine gun fire. Further, it must often happen when actions continue to go on day after day and fights in underground places are of very common occurrence, that men are not brought to the field ambulances and dressing stations until the lapse of a considerable number of hours, and in these the occurrence of gas gangrene, or occasionally of tetanus, may be expected.

The swift arrival of so many wounded in England is not to be taken to mean that the hospitals in France are overcrowded. The occurrence of such overcrowding is, of course, a possibility in these days, when such large numbers of men are engaged on either side, and when, owing to the introduction of barrage fire, high explosives, and other modern developments, a stupendous number of casualties might occur within a very few hours, and the difficulty of dealing with them be increased by large numbers of enemy wounded falling into our hands.

But the number of beds provided in France is reported to be large and the system of evacuation acts swiftly and smoothly. This swiftness is a great advantage from a military point of view, since it lessens the number of mouths that have to be filled in France, as also the store of drugs and dressings and surgical appliances that have constantly to be brought over and distributed by the railways. But it is also a very great advantage from a medical point of view, there being no doubt that if circumstances render it impossible that an injured person should remain to the completion of his treatment at the place where he is injured, the sooner he is got to a hospital where he can remain as long as necessary the greater are his chances of eventual recovery.

Swift evacuation is therefore a matter on which Sir Arthur Sloggett is on all accounts to be congratulated, as also are all those who have formed and operated the component parts of the machinery by which it is brought about. The strain upon them at times must be very great.

It is up, therefore, to the medical profession in Great Britain to assist individually and collectively in organizing the civilian medical work in such fashion as to set free more and more men for purely military medical needs. As was stated by Colonel Lee in the House of Commons last March, it was not even then true that more medical men were being employed in France than were required; he, in fact, said that places could be found for many more, and in any case constant reliefs to supply wastage were necessary. The published lists alone suffice to reveal that the wounded on the battlefield cannot receive swift attention without the occurrence of casualties amongst medical officers.

These losses occur despite the fact that medical officers of front line formations are ordered not to expose themselves unnecessarily.

CASUALTIES IN THE MEDICAL SERVICES.

ARMY.

Killed in Action.

CAPTAIN THOMAS ERROL GUTHRIE, R.A.M.C., was killed in action on July 4th. He was a New Zealander, the only son of Dr. Thomas Orr Guthrie, M.D., of Fielding, New Zealand, and was educated at Edinburgh University, where he graduated as M.B. and Ch.B. in 1909, joining the Special Reserve of the R.A.M.C. as a lieutenant on December 17th, 1909. Prior to the war he was in practice at Fielding, where he was honorary surgeon to Palmerston North Hospital.

Captain E. W. Lawrence, killed on July 10th, aged 28, was the eldest son of Mr. A. J. Lawrence of Pontycymmer. He was educated at Cardiff and Edinburgh, taking the degrees of M.B., Ch.B.Edin. in 1910. Prior to the war he was in practice at Bridgend, where he held, in addition to other public appointments, that of deputy medical officer of health for the Bridgend urban district. He was medical officer to one of the service battalions of the Welsh Fusiliers.

Captain George Oliver Maw, R.A.M.C., died on July 10th of wounds received the previous day. He was the son of Dr. Maw, of Shortlands, Kent, and was educated at Clifton College, at Pembroke College, Cambridge, where he graduated as B.A. in 1909, with first-class honours in Natural Science, and at Bart's. He took the diplomas of M.R.C.S. and L.R.C.P.Lond. in 1912, and subsequently filled the post of house-physician of Bedford County Hospital. He took a temporary commission as lieutenant in the R.A.M.C. on January 12th, 1915, and was promoted to captain on completion of a year's service.

Captain John Cecil Rix, R.A.M.C., was killed in action on July 5th, aged 40. He was the son of the late Dr. W. H. Rix, of Tunbridge Wells, was educated at Cambridge, where he graduated as B.A. in 1898, and after taking the diplomas of M.R.C.S. and L.R.C.P.Lond. in 1902 succeeded to his father's practice at Tonbridge. There he was honorary surgeon to the Hawkenbury convalescent home for children. In 1911–12 he acted as medical officer of health, school medical officer, and police surgeon, until a whole-time medical officer of health was appointed, and in May, 1914, was appointed assistant M.O.H. He took a temporary commission as lieutenant in the R.A.M.C. on April 1st, 1915, becoming captain after a year's service, went to the front last September, and was attached to the Yorkshire Regiment.

Captain David Wallace Smith, R.A.M.C., was reported as killed in action, in the casualty list published on July 15th. He was educated at Glasgow University, where he graduated as M.B. and C.M. in 1901, and was in practice at Brixton. He was lecturer in hygiene to the London County Council, and a member of the Society for the Study of Inebriety. He joined the R.A.M.C. as a temporary lieutenant in the first fortnight of the war, on August 15th, 1914, was promoted to captain on completion of a year's service, and was attached to the Manchester Regiment.

Lieutenant Charles Patrick Kelly, R.A.M.C., was also reported as killed in action, in the casualty list of July 15th. He was educated at Trinity College, Dublin, where he graduated as B.A., M.B., B.Ch., and B.A.O. in 1914, and was senior house-surgeon of Southport Infirmary till he recently took a temporary commission in the R.A.M.C.

Lieutenant Walter Ronald Wilson, R.A.M.C. (temporary).

Died on Service.

Lieutenant-Colonel P. C. Gabbett, I.M.S.

Lieutenant-Colonel Charles Monk, Bombay Medical Service (retired), died after an operation on July 11th in the 2nd London General Hospital, aged 62. He was born on May 11th, 1854, educated at the Ledwich School of Medicine, Dublin, and took the diplomas of L.R.C.S.I. in 1874, L.K.Q.C.P.I. in 1876. Entering the I.M.S. as surgeon on March 30th, 1878, he became surgeon-major on March 30th, 1890, surgeon-lieutenant-colonel on March 30th, 1898, was placed on the selected list for promotion on March 31st, 1903, and retired on November 25th, 1908. He served in the Russo-Turkish war of 1877 and in the second Afghan war in 1880, and received the medal. On March 6th, 1914, he was appointed to the command of the 2nd London Casualty Clearing Station, and served with that unit in France.

Captain Edward Augustine Bell, R.A.M.C.(T.F.), was accidentally drowned, on service abroad, on July 11th. He was the son of the late William Bell, M.R.C.S. and J.P., of New Brighton, Cheshire, and was educated at King's College, London, where he held both the junior and senior medical scholarships; and took the diplomas of M.R.C.S. and L.R.C.P.Lond. in 1902, also taking the M.B.Lond. in 1902 and the B.S. in 1903. After filling the posts of prosector to the Royal College of Surgeons and house surgeon to the Royal Free Hospital, he went into practice at New Brighton, where he was honorary surgeon to the Wallasey Cottage Hospital, the New Brighton Convalescent Home for Women and Children, and the Wallasey Ladies' Charity; also surgeon to the home for aged mariners at Egremont, and Admiralty surgeon and agent. He joined the 5th Highland Field Ambulance as lieutenant and transport officer on September 24th, 1914.

Captain Alexander Seabrooke, R.A.M.C., died on service on July 1st, aged 31. He was the son of Mr. J. Seabrooke, of the Elms, Grays, Essex, and was educated at Cambridge and at Guy's Hospital, and took the diplomas of M.R.C.S. and L.R.C.P.Lond. in 1912, the M.B. and B.C. at Cambridge in 1913, after which he filled the posts successively of assistant house-surgeon, clinical assistant, and house-surgeon at Guy's Hospital. He took a temporary commission as lieutenant in the R.A.M.C. on March 8th, 1915, and was promoted to captain on completion of a year's service.

Wounded.

Lieutenant-Colonel C. H. Howkins, R.A.M.C.(T.F.).
Captain F. M. Barnes, R.A.M.C. (S.R.).
Captain R. Dearsley, New Zealand A.M.C.
Captain J. M. Elliott, R.A.M.C.
Captain G. D. Fairley, R.A.M.C. (temporary).
Captain A. C. Haddow, R.A.M.C.(T.F.).
Captain G. Stanton, R.A.M.C.(S.R.).
Lieutenant M. C. Bridgman, R.A.M.C. (temporary).
Lieutenant J. R. Hall, R.A.M.C. (temporary).
Lieutenant L. M. Ingle, R.A.M.C. (temporary).

Prisoners of War.

Captain F. S. Park, Canadian Army Medical Corps, who was reported as missing in the beginning of June, has now been stated to be a prisoner of war.

A further list of prisoners taken at the surrender of Kut, last April, published on July 18th, includes the names of Captain P. B. Bharucha, I.M.S., Captain E. G. S. Cane, R.A.M.C., Captain W. L. E. Tretz, R.A.M.C., and Lieutenant P. E. O'Donoghue, I.S.M.D. Captain Cane's name was included in the first list published, but those of the other three were not.

Missing.

Captain V. D. O. Logan, R.A.M.C. (temporary).
Captain J. W. N. Roberts, R.A.M.C. (temporary).

DEATHS AMONG SONS OF MEDICAL MEN.

Beard, Frederic Gerald Vesey, Lieutenant Worcestershire Regiment, eldest son of Dr. Beard, of Croydon, killed on July 4th, aged 26. He was educated at Epsom College and at Trinity College, Dublin, joined the Public Schools Battalion in August, 1914, and got his commission as second lieutenant in the Worcesters on November 23rd, 1914. In July, 1915, he went to Gallipoli and served there until the withdrawal, taking part in the evacuation of both Suvla Bay and Cape Helles. He went to France last March.

Beckett, Victor Louis Sydney, Major the Yorkshire Regiment, who died in France on July 14th of wounds received in action on July 5th, was the youngest son of the late Dr. F. M. Beckett, of S. Audrey's, Ely, Cambs. He was educated at the King's School, Ely, and Christ's College, Cambridge. He passed into the army as a university candidate, and was given a commission in the Army Service Corps in 1902, which he resigned in 1905. He was for two years in Canada, and in 1909 he joined the Middlesex and Royal Dental Hospitals, and obtained the diploma of L.D.S. in 1913. At the outbreak of war he threw up a good appointment, applied for and received a commission as first lieutenant in the Yorkshire Regiment. Two months later he obtained his captaincy, and went to the front about a year ago with his regiment.

Bernard, Herbert Clifford, Colonel Royal Irish Rifles, son of the late Robert Bernard, M.D., Deputy Inspector-General R.N., killed in action on July 1st. He was born on July 15th, 1865, educated at Llandovery School and at Derby Grammar School, and entered Sandhurst as a Queen's cadet. He got a commission as second lieutenant in the Hampshire Regiment on August 25th, 1884, joined the Indian army on September 20th, 1886, became lieutenant-colonel on April 25th, 1909, and colonel on October 22nd, 1913. After spending nearly twenty years in Burma, in 1905 he was appointed second in command of the

45th or Rattray's Sikhs, and commanded that regiment from 1909 to 1914. At the beginning of the war he was appointed to the command of a battalion of the Royal Irish Rifles. He served in the Burmese war from 1885 to 1889, and was present at the capture of Minhla and Mandalay (medal and two clasps), in the Manipur expedition of 1891 (clasp), in Burma again from 1889 to 1892, in the Chinbok expedition (clasp), and in the Zakka Khel operations on the north-west frontier of India in 1908 (medal and clasp).

Brown, Andrew Cranstown, Second Lieutenant South Staffordshire Regiment, only son of the late James Brown, M.D., of Harvieston, Tring, killed July 2nd, aged 21.

Dawson, Gerald Moore, Lieutenant King's Liverpool Regiment, second son of the late Dr. T. Moore Dawson, of Liverpool, was killed in action on July 2nd, at the age of 22.

Don, David Fairweather, Second Lieutenant South Wales Borderers, youngest son of Surgeon-General Don, R.A.M.C.(ret.), of 52, Canfield Gardens, West Hampstead, killed on July 2nd, aged 22. He was educated at University College School, which he represented at Bisley, and when the war began was a member of the staff of the National Bank of India. He enlisted in the Honourable Artillery Company in January, 1915, and got a commission in the Sherwood Foresters in July. In October he was sent to Egypt, where he was attached to the South Wales Borderers, and went to the front in France last March.

Duke, Valentine Gordon, Captain Royal Garrison Artillery, killed on July 10th, was the second son of the late Colonel A. W. Duke, R.A.M.C., of Tunbridge Wells. He had served in Singapore, India, and Aden, and went with his battery to the front in August, 1915.

Harrison, William, Second Lieutenant Gordon Highlanders, attached Seaforth Highlanders, only son of Dr. John Harrison, M.D., of St. Machutes, Lesmahagow, died July 5th of wounds received on July 1st, aged 20. His commission was dated March 17th, 1915.

Hess, Arthur Frank, Major West Yorkshire Regiment, who died on July 14th from wounds received on July 1st, was the eldest son of the late Dr. A. Hess, of Courtfield Gardens, Kensington. He was 31 years of age, and received his commission in the Leeds Rifles (Volunteers) in 1903, and on the outbreak of war was appointed A.D.C. to Major-General Baldock, C.B. He went to the front in April, 1915, and on appointment as major three months later rejoined his battalion. He was wounded near Ypres in August, 1915, but rejoined two months later.

Hodgkinson, Alan, Lieutenant Royal Warwickshire Regiment, younger son of Dr. Alexander Hodgkinson, formerly of The Grange, Winslow, now of Bradshaigh, Lower Bourne, Farnham, Surrey, killed on July 1st, aged 23. His commission was dated February 2nd, 1915.

Holman, Guy Henry Wallis, Lieutenant Duke of Edinburgh's Wiltshire Regiment, son of Dr. H. J. Holman, of Eastbourne, died of wounds on July 6th, aged 20. He got his commission on March 17th, 1915, had been previously wounded at Hooge, and returned to the front last December.

Hunt, John Reginald Lilly, Second Lieutenant, killed in action on July 2nd, was the only son of Dr. J. Aspinall Hunt, of Borrowash, Derbyshire.

Hunter, John Maurice, Second Lieutenant Wiltshire Regiment, killed in action on July 3rd, was the son of Dr. John Hunter, formerly of Glasgow. The commanding officer, in communicating with Dr. Hunter regarding the deceased, said, "I regret his loss not only as an asset to the English army, but as a personal friend."

Millar, Walter Gordon, Lieutenant East Yorkshire Regiment, aged 19, killed on July 7th, was the elder son of Dr. William Millar, of Brough, East Yorkshire. During his four years at Clifton College, Bristol, he was a member of the O.T.C., and was gazetted to the East Yorkshire Regiment on August 15th, 1914. He joined the Expeditionary Force in the following December, and was promoted to lieutenant in February, 1915.

Murray, Randolph Noel, Captain Inniskilling Fusiliers, who was reported missing on April 27th, is stated to have died at the age of 21 in a German field hospital. He was the only son of Mr. G. M. P. Murray, F.R.C.S.I., of Dublin. He was studying medicine at Trinity College, Dublin, when war broke out. He obtained his commission in the newly formed 7th Inniskilling Fusiliers, being gazetted as lieutenant in November, 1914, and captain in April, 1916.

Orr, J. Kenneth, Second Lieutenant Duke of Cambridge's Middlesex Regiment, eldest son of Dr. Orr, of East Finchley, missing, believed killed, July 1st, aged 21. He was educated at Highgate School and at King's College, London, where he was studying engineering, and was in the O.T.C. at both. He got his commission on March 10th, 1915, and went to the front in February, 1916.

Rieu, Alfred, Middlesex Regiment, fourth son of the late Dr. Charles Rieu, of 26, Woburn Square, London, killed July 3rd, aged 37.

Royston-Pigott, George Arthur, D.S.O., Lieutenant-Colonel Worcestershire Regiment, eldest son of the late Dr. G. W. Royston-Pigott, F.R.S., killed July 3rd, aged 41. He got his first commission in 1895, in the second battalion of the Northamptonshire Regiment, served with that regiment in South Africa, gaining the King's and Queen's medals with five clasps, got his majority on March 15th, 1915, and commanded the battalion at Loos, being mentioned in dispatches, and gaining the D.S.O. Subsequently he was appointed to command a battalion of the Worcester Regiment.

Sawers-Scott, Ian A., Second Lieutenant King's Own Scottish Borderers, youngest son of Dr. Sawers-Scott, of Withington, Manchester, killed on July 1st, aged 19. He was educated at Manchester Grammar School and at Fettes College, Edinburgh, where he was a foundation scholar, and gained a scholarship to the University. His brother, Lieutenant Norman Sawers-Scott, of the same regiment, was killed at Ypres last year.

Shaw, Robert Ramsay Stuart, Lieutenant and Adjutant Prince of Wales's North Staffordshire Regiment, only son of Thomas David Stuart Shaw, M.B., of Lichfield, Staffordshire, killed July 1st, aged 20. He took a commission as second lieutenant in the 5th Territorial battalion of the regiment on March 25th, 1914.

Stack, John Masfen, Captain North Staffordshire Regiment, second son of Major E. C. Stack, R.A.M.C., of Burton-on-Trent, killed on July 1st. His commission as lieutenant in the 5th Territorial battalion of the regiment was dated August 20th, 1914. His father is medical officer of the same battalion.

Stevens, Montague, Lieutenant Worcestershire Regiment, youngest son of Dr. A. F. Stevens, of Seaford, Sussex, killed July 7th, aged 25. His first commission was dated February 6th, 1915.

Stewart, J. C. M., Second Lieutenant Royal Flying Corps, eldest son of Dr. Stewart, of Lowell House, Leeds, killed July 3rd, aged 24. He served his apprenticeship as an engineer to Messrs. J. and J. Maclaren, of Leeds, and afterwards was engaged in experimental work in the laboratory of the Wolseley Tool and Motor Car Company. At the beginning of the war he joined the Leeds "Pals" Battalion, and on March 30th, 1915, got a commission in the West Yorkshire Regiment. Subsequently he was transferred to the Royal Flying Corps. On returning from a bombing expedition over the German lines, a chance shell struck his aeroplane, and killed both its occupants just as it was about to land.

Tindal, David, Private Highland Light Infantry, eldest son of David Tindal, M.D., of Hiawatha, Burnside, Rutherglen, killed June 30th, aged 25.

Trevor-Jones, Edward Evan, Second Lieutenant Rifle Brigade, elder son of Major E. J. Trevor-Cory, R.A.M.C.(T.F.), formerly of Aberdare, Glamorgan, killed July 2nd, aged 30. He was educated at Downside School and at Clare College, Cambridge, where he was a member of the O.T.C. He got his commission on December 16th, 1914, and went to the front in June, 1915, where he was for some time employed as bombing officer. He was killed while carrying a wounded soldier into safety.

Unsworth, Cyril, Lieutenant South Lancashire Regiment, eldest son of Dr. Unsworth, of North Road, St. Helens, killed in the recent fighting in France in the beginning of July.

Watts, Talbot Hamilton, Captain Middlesex Regiment, youngest son of the late Dr. F. Watts, killed in action while leading his company on July 1st, aged 33. He belonged to the firm of Messrs. Killick, Nixon and Co., Bombay, and at the beginning of the war was at home on leave. He at once joined the Public Schools Battalion, got his first commission in September, 1914, was promoted to lieutenant on January 27th, 1915, and to captain in January, 1916. He went to the front last November.

Wiglesworth, Godfrey, Second Lieutenant Royal Flying Corps, only son of Dr. Wiglesworth, of Winscombe, Somersetshire, formerly of Rainhill, Lancashire, killed at the front in a flying accident on July 8th, aged 21. He was educated at Clifton College and at King's College, Cambridge, where he was a medical student and a member of the O.T.C. He got his commission last December.

Wright, Private Alan W., aged 21, killed on July 1st whilst engaged in barbed wire operations, was the son of Dr. W. H. Wright of Liverpool. After receiving his education at the Liverpool College and King William College, Isle of Man, he was apprenticed to a firm of cotton brokers and had a promising career. He joined the colours in 1914, and went to France in November, 1915.

MEDICAL STUDENTS.

Fletcher, William George, Second Lieutenant North Staffordshire Regiment, third son of Mr. R. Fletcher, of 19, Wadham Gardens, London, N.W., killed in action on July 3rd, aged 22. He was educated at Highgate School and in France, and was a medical student at the London Hospital when the war began. He joined the Australian Voluntary Hospital, and went to the front with that unit. Later he came home, got a commission in the North Staffords on January 28th, 1915, and went to the front with the South Lancashire Regiment. He was wounded last January, and returned to the front in April.

Heaton, Eric Rupert, Second Lieutenant Middlesex Regiment, youngest son of the Rev. Daniel Heaton, Wesley House, Scunthorpe, reported missing, believed killed, on July 1st, aged 19. He was a medical student before the war, and a member of the London University O.T.C. He got his commission on March 17th, 1915. His three brothers are also all serving in the army.

Sternberg, R. O., Second Lieutenant Royal Field Artillery, son of Mr. L. Sternberg, Lyndhurst, West Didsbury, Manchester, died of wounds on July 1st, aged 23. He was educated at Charterhouse, and at Clare College, Cambridge, where he was studying medicine. He joined the army as a dispatch rider in September, 1914, and was at the front from October, 1914, to July, 1915. He came home on receiving a commission in the R.F.A. Reserve, and went out again last December.

Taylor, Ronald Woodhouse, Second Lieutenant, Northumberland Fusiliers, killed on July 7th, was the son of the Rev. G. R. Taylor of Newcastle-upon-Tyne. On completing his first term as a student at the Durham University College of Medicine he offered his services, and was granted a commission in January, 1915.

NOTES.

CANADIAN RED CROSS SOCIETY.

THE eighth annual report of the proceedings of the Canadian Red Cross Society deals with work of the year 1915 under three heads—the work in Canada, the work in England, and the active assistance given by the society in the several war zones through its commissioners in co-operation with the British Red Cross Society.

The number of branches of the society in Canada is now 484; of these, 300 were established during the year. In addition, a large number of auxiliary societies have been founded in places where the population is too small to warrant the establishment of regular branches of the society. A monthly bulletin containing information is published, and pamphlets entitled *Suggestions for Work* (of which about 200,000 copies have been sent out) and *War Work* are issued.

An information bureau in Canada has been established by Mr. Hugh Langton, the librarian of Toronto University, for the purpose of answering inquiries as to the whereabouts, condition, and progress of disabled Canadian soldiers. A number of ladies have given their services gratuitously and a card index has been compiled. An index list of Canadian prisoners in Germany is also kept.

As regards the work in England, which is under the able direction of Colonel C. A. Hodgetts, C.A.M.C., the Duchess of Connaught Red Cross Hospital, in Major Astor's park overlooking the Thames at Cliveden, under the command of Colonel Gorrell, C.A.M.C., of Ottawa, has accommodation for 900 patients, and the King's Canadian Red Cross Hospital at Bushey Park for 300. The Peak Hydro, at Buxton, has been taken over by the society and converted into the Canadian Medical Services Special Hospital for rheumatism; and as the need was felt for more hospital accommodation for officers a house in Hyde Park Place, London, was obtained through Colonel and Mrs. Gooderham, of Toronto, who paid for the equipment and alterations necessary to convert this residence into the Daughters of the Empire Canadian Red Cross Hospital; the cost of maintenance of this hospital has been undertaken by the Canadian Militia Department. The society has also given material assistance to a number of other hospitals and institutions in England and France and to the military hospitals established in Canada. The treasurer's report shows that the following contributions were made by the society during the year:

British Red Cross Society, 50,000 dols.; French Red Cross Society, 23,500 dols.; St. John Ambulance and Brigade, 25,000 dols.; Duchess of Connaught's Hospital, Cliveden, 14,950 dols; Queen's Canadian Military Hospital, Beechborough Park, 5,005 dols.

Other disbursements included: Amount remitted to London office, 340,796 98 dols.; ambulance and equipment, 41,281 dols.; clothing, hospital, and service supplies, 54,073 dols.; packing and shipping charges, 32,335 dols; badges, brooches, and pins, 6,214 dols.; advertising and publicity 7,847 dols.; office maintenance and expenses, 33,621 dols.

During the year 78 Red Cross nurses were sent to England by the society, and 45 of them subsequently went to the Mediterranean.

An agreement was made in May last whereby the position of the Canadian Red Cross Society in France was clearly established as a branch of the British Red Cross Society. The work in France is in charge of an assistant commissioner, Captain H. W. Blaylock, assisted by Captain G. W. Bridges. Two supply dépôts have been established at Boulogne, and there are advanced dépôts with each of the Canadian general hospitals. In Paris a dépôt has been established for the distribution of supplies to French hospitals and to the Canadian Hospital at St. Cloud. From November, 1914, to the end of 1915, fifty-six ambulances were placed by the society at the disposal of the C.A.M.C.

MENTIONED IN DISPATCHES.

Mediterranean.

The *London Gazette* of July 12th publishes a list of officers mentioned for good service in the Mediterranean Expeditionary Force during Sir Charles Munro's tenure of command of that force, in continuation of the former dispatch published on April 10th. Among those whose services are brought to notice are the following medical officers:

Head Quarters Staff.—Surgeon-Generals W. G. A. Bedford, W. G. Macpherson, C.B., C.M.G.; Colonels R. H. Luce (T.F.), C. C. Reilly; Lieutenant-Colonels H. A. Bray, T. P. Jones; Major W. M. B. Sparkes; all of the R.A.M.C.

R.A.M.C.—Colonel W. H. Willcox (temporary); Lieutenant-Colonels B. Forde, C.M.G., L. Humphry, T. C. Mackenzie, D.S.O., G. St. C. Thom; Majors E. H. Cox (T.F.), W. Jones, R. R. Lewis, C. H. Lindsay, C.M.G., A. McMunn, A. W. Moore (T.F.), H. Richardson (T.F.); Captains J. Anderson, R. G. Archibald, H. S. Beadles (T.F.), J. A. Bennett, L. C. Bruce (T.F.), E. T. Burke (S.R.), T. S. Eves, J. F. Farrow (T.F.), E. D. Gairdner (T.F.), A. Graham (T.F., died of wounds), C. Lovell (S.R.), W. Mathieson, H. F. Panton, R. Robeson, L. R. Shore, O. Teichmann (T.F.), W. T. Torrance (T.F.); temporary Captains G. S. Blandy, A. Bremner, F. Harris, W. H. Laslett, M. A. Macdonald, W. N. Rishworth; Surgeon-Captain W. T. Rowe; temporary Lieutenants C. T. Galbraith, E. C. Mackay, L. M. V. Mitchell (T.F.), G. Walker; Quartermasters and honorary Lieutenants G. A. Collier, C. J. Hazell, C. H. Inwood, B. B. Rhodes, R. Spencer.

Royal Naval Division.—Staff Surgeon E. B. Kenny; Surgeon J. H. Burdett; temporary Surgeons C. F. Mayne, C. H. S. Taylor, M. Onslow-Ford, G. Hamilton (all R.N.).

Australian Army Medical Corps.—Lieut.-Colonels A. H. Sturdee, C.M.G., C. T. C. de Crespigny; Majors G. W. Barber, A. Y. Fullerton; Captains E. T. Brennan, A. V. Honman, J. J. Black, R. D. Campbell, H. V. P. Conrick, C. W. Thompson; Quartermasters and honorary Captains A. E. Clarke, E. T. Boddam; honorary Lieutenant F. Marshall.

Canadian Army Medical Corps.—Colonel J. A. Roberts; Lieut.-Colonels E. J. Davis, E. J. Williams.

I.M.S.—Majors W. R. Battye, D.S.O., N. S. Wells; Captains T. J. C. Evans, G. S. Husband, C. J. Stocker.

I.S.M.D.—Sub-Assistant-Surgeons Bhagwan Singh (14th Ferozepore Sikhs), Daulat Singh, Ajudhya Parshad Misr, E. Abraham, Muhammad Hussain, Ishar Singh, Shankar Lal, Hasan Din Dar, Hari Chand, S. B. Murphy.

Mesopotamia.

The *London Gazette* of July 13th publishes a list of officers specially mentioned by Major-General Townshend, in continuation of Sir John Nixon's dispatch of January 17th, 1916. Among them are the following medical officers:

R.A.M.C.—Lieutenant-Colonels H. O. B. Browne-Mason, J. F. Donegan, C.B., J. Hennessy, C.B.; Majors E. V. Aylen, F. C. Lambert (died); Captains S. J. Barry, A. S. Cane, R. K. Mallam, A. T. J. McCreery, L. Murphy, J. Startin, G. Wilson.

I.M.S.—Colonel P. Hehir, C.B.; Majors E. F. Baines, C. H. Barber, W. M. Pearson, C. C. C. Shaw, C. H. Watson; Captains P. B. Bharucha, J. A. Cruickshank, K. K. Mukerji, M. L. Puri; Lieutenant W. C. Spackman.

I.S.M.D.—Assistant Surgeons N. P. Shemain, E. A. Cotton, D. D. Mackay, A. E. A. Phaure, S. A. De Souza, F. H. J. Rowley, M. J. Nicholas, E. B. Holt; Subassistant Surgeons Reuben Benjamin, Dul Basit, Mitthu Lall, D. V. B. Butt, Resar Singh.

H.M.S. Alcantara.

The *London Gazette* of July 14th publishes a number of honours, mentions in dispatches, etc., conferred upon officers and men of the Royal Navy. Among those mentioned for good service in the action between H.M.S. *Alcantara* and the German raider *Greif* on February 29th is Surgeon J. P. Barry, R.N.

HONOURS.

Among those invested by the King on July 11th with the insignia of the respective divisions of the orders into which they have been admitted were Surgeon-General John Dennis, R.N., C.B., and Captain J. A. Turner, C.I.E.

ARTIFICIAL HAND APPARATUS.

A committee, consisting of MM. Faure, Kirmisson, Quénu, Rieffel, and Rochard, announce that an anonymous benefactor has offered £2,000 to the Paris Surgical Society to be given as a prize to the inventor "of the mechanical apparatus supplying the place of the hand best." Competitors, who must belong to allied or neutral nations, will be required to exhibit mutilated men who have been using the apparatus for at least six months; the apparatus will be tested by the society for whatever length of time it may think proper, but the apparatus which wins the prize will remain the property of the inventor. The competition will be open till two years after the end of the war. Descriptions and samples should be sent to M. le Secrétaire Général de la Société Nationale de Chirurgie, 12, Rue de Seine, Paris.

England and Wales.

LIVERPOOL AND THE PREVENTION OF VENEREAL DISEASE.

A CONFERENCE, convened and presided over by the Lord Mayor of Liverpool, was held at the Town Hall on July 12th. It was promoted by the Liverpool Medical Institution, a subcommittee of which, under the chairmanship of the President, Dr. Charles J. Macalister, is taking an active part in disseminating knowledge among all classes—civil as well as military—of the dangers of venereal disease. There was a good attendance of ladies and gentlemen, medical men and women, and representatives of various bodies concerned with social welfare and amelioration. Sir Thomas Barlow proposed the following resolution:

> That this meeting of the citizens of Liverpool, realizing the serious influence of venereal diseases upon the public health, approves the action of the Government in taking steps to give effect to the recommendations of the Royal

Commission, and undertakes by all means in its power to support the work of the Liverpool Medical Institution Branch of the National Council for combating venereal disease.

He cited the example the city had set with regard to the treatment of ophthalmia neonatorum, pointing out that nearly one-third of the blind owed their pitiful condition to gonorrhoea. As such beneficent results had been obtained in regard to early treatment in such cases, he urged that syphilis in adults should be treated far more promptly than hitherto. The public should be educated and made thoroughly alive to the danger of concealment and the risk of communicating infection to the innocent. He alluded to what Liverpool had done in the study of tropical diseases, and pertinently urged that this peril at home should demand at least equally serious attention.

Dr. F. W. Mott, in seconding the resolution, dwelt upon the importance of preventing the disastrous nervous sequelae by early and efficient treatment of venereal diseases. In this respect he mentioned the beneficial results that had accrued to the health of the army and navy, and urged that the industrial population should have similar opportunity for efficient treatment.

Dr. Arthur Newsholme argued that it was economically sound to spend money on early and efficient treatment, and so save hospital expenditure in treating the sequelae, which are a fruitful source of our social wreckage and fill our asylums.

Dr. Charles J. Macalister briefly outlined the work of the subcommittee appointed by the Liverpool Medical Institution in November, 1913. He laid stress on the value of the educational programme that had been carried out not only among various civilian classes of both sexes but also among the military stationed in and around Liverpool.

In the evening Dr. Mott gave a public lecture, illustrated by lantern slides, on the influence of venereal diseases in civic life, and pointed out how a sovereign spent in combating the disease at the outset would save hundreds. The general feeling is that Liverpool has made a good start and is determined to do its best.

Midwives and the London County Council.

At the meeting of the London County Council on July 18th the Midwives Act Committee pointed out that certain alterations which the Council had suggested had not been adopted by the Central Midwives Board in its new rules. These suggestions referred to certain particulars in the apparel of the midwife, to compelling her properly to wash and cleanse her patient during the lying-in period, to enlarging the list of cases in which medical aid must be summoned, and to the need for the midwife to visit a new case within twelve hours after the birth of the child and subsequently daily for ten days. The Board had, however, adopted the Council's view that the requirements as to summoning medical aid should be applicable if attendance was renewed after the expiration of ten days, and that the midwives should be required to notify their liability to be a source of infection. The Board had also incorporated, in a modified form, an amendment suggested by the Council with a view to ensuring that medical aid should be secured with greater promptness, while special attention was drawn, by way of a footnote, to the urgency in cases of inflammation of the eyes. At the same meeting of the Council the remuneration of the lecturers at the classes for midwives which the Council is instituting was fixed at two guineas for an attendance of about two hours.

It was announced that during the last three months twenty-six applications for the registration of lying-in homes had been granted by the Council under its new powers. In one case registration had been refused, and in another it had been subsequently cancelled, while in several instances it had been made conditional upon alterations or repairs to the premises. It was also stated that the number of establishments for massage or special treatment registered within the same period was 178, making 745 in all. So far only seventeen applications had been refused.

University of Wales.

At the congregation of the University of Wales for admission to degrees held at Aberystwith on July 15th, the vice-chancellor drew particular attention to the fact that the degrees of M.B. and Ch.B. awarded to Mr. James W. T. Thomas of Cardiff were the first degrees in medicine granted by the University of Wales. Many of the male graduates in other faculties were not present to receive their degrees, being absent on military service.

Scotland.

Professor Matthew Hay, M.O.H. Aberdeen, reports that during June twenty-nine cases of acute anterior poliomyelitis were notified in the city, and ten additional cases during the first week of July. With the exception of three, all were in children of the age of 3 years or under, the majority being about 1 to 2½ years. The cases have practically been confined to families of the working classes, on the whole well cared for and above the average in respect of cleanliness. All, with three exceptions, occurred in houses of three rooms and under. Only in a very few instances had a connexion between cases been traced. Two deaths have occurred.

St. Andrew's Ambulance Association.

Sir Alexander Ogston presided at the thirty-third annual meeting of the St. Andrew's Ambulance Association held in Glasgow on July 12th. The report stated that all the military hospitals of Scotland, officers and men, were staffed from the home hospitals' reserve of the St. Andrew's Ambulance Corps within forty-eight hours of the outbreak of the war. The original staff of non-commissioned officers and men provided by the corps was sent on foreign service in October, 1915, and within one week the hospitals were again staffed by members of the corps. After the adoption of the report, Sir Alexander Ogston formally presented a motor ambulance wagon to the Belgian Government. No one, he said, could dream of the war being concluded without provision being made for the restoration of Belgium and reparation for the wrongs done to that country.

University of Edinburgh.

The graduation ceremonial in arts, science, and medicine took place on July 11th, when Sir Alfred Ewing, the new principal, presided. Many of the new graduates wore khaki and navy blue uniforms under their academic robes. The principal, after recalling the fact that he had entered the university first as an undergraduate forty-five years ago, said that a university had three functions—to furnish the mind with knowledge, to quicken and widen the intelligence, and to mould and set the character; the greatest of these was the last. The war had swept aside much that was mean, petty, and sordid, had made plain the primary duty of self-sacrifice, and had brought men and women back to the eternal difference of right and wrong. More than 4,000 members of the university were serving with the forces, and more than 3,000 held commissions. The influence of the war on the social fabric could be compared to an effect sometimes seen in the study of metals. Let a piece of metal be exposed to certain conditions, and almost suddenly a great internal transformation occurred. Its external form showed no change. In the last analysis of the chemist it was still the same substance. The same molecules were there; but silently and invisibly they had marshalled themselves into wholly different patterns of structure. In a very real sense the material had become new. Its old attributes had disappeared. What was hard and brittle was now plastic; it might readily be shaped into other forms; it was capable of uses to which it could not have been put in its former state. The effect was permanent, persisting after the conditions which produced it had been removed. Was there not, he asked, some parallel to this in the new-made world that awaited us after the war—in the enormous changes, spiritual, social, political, economic, industrial, educational, that were even now taking place, and must increasingly take place in the early years of peace? When our civilization, which was now straining to save itself, settled to the task of reconstruction, would it not find men's minds more plastic, traditions less controlling, prejudices less final? A far-reaching revision of methods and aims in education might be expected. The universities would continue to be sanctuaries of the spirit of man, and temples of research, but was it not reasonable to look for a more direct relation in their future work to industrial requirements and economic problems? It would be for the universities to promote

industrial efficiency, to bring science to bear on manufacture, and to lead capital and labour into co-operation by a revision of the dogmas of political economy in the light of broader ethics. Women in their response to the nation's urgent call had shown capabilities and adaptability beyond expectation. This would not come to an end with the war, and a permanent increase in the army of productive workers ought to be welcomed. The responsibility of the university in providing higher education for women would thereby be enlarged. While a larger proportion of the people would seek to obtain the higher education, it was certain that all would be less able to pay for it, and as the universities of Scotland had always boasted that their doors had always been open to the poor, this might throw upon them a relatively large share of the common work.

Ireland.

THE TUBERCULOSIS INSTITUTES OF BELFAST.

THE statistics of the Tuberculosis Department of Belfast for the year ending March 31st, 1916, lately presented by the chief tuberculosis officer (Dr. Trimble), give interesting and important information. There are two institutes in the city; the one for the co. Antrim, which forms the larger portion of the town, and the other for the co. Down side of the city. Patients are examined at both institutes, and also at the Union Infirmary and at their own homes. The number of medical examinations and visits was 11,690 to old patients, and 1,615 to new patients; the number of nurses' visits was 17,957 to old patients, and 1,277 to new patients.

Table A, extracted from the returns made to the Local Government Board, show the number of persons treated for tuberculosis under the Corporation scheme, whether at the dispensaries, at the sanatoriums and hospitals provided by the County Council, at the Union Infirmary, at the Forster Green Hospital, or at home (domiciliary treatment):

TABLE A.

Insured and Exempt:			
Adult males	1,035		
,, females	1,720	—	2,805
Non-insured:			
Adult males	286		
,, females	589	—	875
Male children	345		
Female children	397	—	742
Gross total			4,422

Table B summarizes the cases of pulmonary and non-pulmonary tuberculosis treated during the year at the dispensaries, the county sanatoriums and hospitals, Forster Green Hospital, Union Infirmary, and at home.

TABLE B.

Cases of Pulmonary Tuberculosis:			
Adult males	1,296		
,, females	2,109	—	3,405
Male children under 15	266		
Female children under 15	326	—	592
Cases of Non-pulmonary Tuberculosis:			
Adult males	75		
,, females	200	—	275
Male children under 15	79		
Female children under 15	71	—	150
Gross total			4,422

The total figures do not represent individuals, as one person may have received all the forms of treatment—that is, institute, sanatorium, hospital, and domiciliary—in the course of the year. The number of individuals who received treatment during the year amounted to 3,246.

In ordinary times the population of the city would now have mounted to about 400,000; this indicates that somewhere about 1 in each 100 of population receives some form of treatment at the hands of the tuberculosis officers in the year. But the work of the department is only commencing; it is another step towards the State or municipal treatment of disease. Crime, lunacy, public health, and now tuberculosis and the infectious fevers are added. It is a gigantic experiment; success seems to be coming, although slowly.

Correspondence.

THE RELIEF OF DISTRESS IN THE MEDICAL PROFESSION ARISING OUT OF THE WAR.

SIR,—The war has already produced much distress in the medical profession, and this is certain to increase if the war continues long. The distress will, I trust, gradually be relieved when the war is over, and the doctors now serving return to their civil duties. Meanwhile the present distress is considerable.

The Auxiliary R.A.M.C. Fund which has been proposed will, if worked on the lines of the regular R.A.M.C. Fund, provide, so far as I can judge, only for the education of the orphans of officers serving temporarily in the war, and who are subscribers to that fund. This requires a large capital sum, and involves considerable liabilities extending over many years. Worthy as such an object is in itself, it does not deal with the immediate distress at all.

A scheme which appears to be strongly supported proposes to deal with this temporary distress by way of loans. For such a purpose a very large sum will be necessary. It is a scheme which no doubt would be very appropriate for certain cases, but experience has shown that a loan fund is very difficult to administer satisfactorily. Loans, too, require time for arrangement, and in many of the most urgent cases time is pressing, and there may be no security upon which loans can be safely raised.

In most cases what is required is immediate help, and often to a substantial amount. It is this class with which the Royal Medical Benevolent Fund is already dealing, so far as its means permit, from its Emergency Fund, for which an appeal was issued three weeks ago. This department of the fund is a going concern, and it only needs larger resources.

I have not seen that it has been proposed to form any new fund upon the same lines, and on general grounds such duplication is neither necessary nor desirable.

The profession wants, I am told, a workable scheme, and I make this suggestion in the belief that this plan would be the simplest and least expensive way of dealing with the problems that have arisen.—I am, etc.,

15, Wimpole Street, W., July 18th. SAMUEL WEST.

THE POSITION OF MEDICAL OFFICERS OF HEALTH.

SIR,—In an interesting article on pages 49 and 50 of the BRITISH MEDICAL JOURNAL of July 8th on the care of the pregnant woman you suggest that "medical officers of health would be much more useful to the community if they would have the courage to tell the public bodies to which they are advisers the disagreeable truth (in regard to housing and other matters) in place of suggesting small measures," etc.

On most public bodies owners of property are well represented, and as the authority has the final decision in regard to the closing and demolition of houses under the Housing, Town Planning, etc., Act of 1909, the advice of the medical officer of health in regard to housing and other matters is frequently ignored. In the absence of security of tenure the medical officer of health cannot insist on his recommendations being carried out, and may even lose his appointment if he pushes things too far. In commenting on the action taken by the Bath City Council (page 53) in regard to their medical officer of health, you suggest that the Local Government Board might go a good deal further than it has hitherto in dealing with local authorities.

It is in the interest of the public that public health administration should be put on a proper basis, and until the just demands of medical officers in the health and school services for reform in regard to security of tenure, superannuation, and promotion are met the health of the public must suffer. More attention than ever has during the present war been called to the importance of the national health; it will therefore be necessary that energetic measures should be taken by the British Medical Association and the Society of Medical Officers of Health to demand these reforms. What is wanted is the establishment of a ministry of public health; this would directly

or indirectly lead to inquiry in regard to public health reforms and as to what legislative measures were necessary to carry out such reforms.

The security of tenure promised by the President of the Local Government Board in connexion with all new appointments will only affect a very small number of medical officers of health.—I am, etc.,

July 7th. MEDICAL OFFICER OF HEALTH.

THE CARE OF THE PREGNANT WOMAN.

SIR,—Your leading article of July 8th on this subject pays eloquent tribute to the important contribution by Professor Donald in the JOURNAL of that date.

Professor Donald points out in the first place that the fashionable term "antenatal" as applied to the treatment of the infant is but a synonym, and an objectionable one, for "the care of the pregnant woman," which has engrossed the attention of at least one great maternity hospital for thirty years. With delicate irony he suggests that the disuse into which this sensible phrase has fallen might be due to the niceties of taste of officers of health who shrink from such vulgar expressions as "the care of the pregnant woman." Moreover, it sounds so dreadfully commonplace in the ears of those eager to thrust this "new" department upon a public alive at last to this question of national import.

In his calm and dispassionate survey of the position, Professor Donald utters a warning note against basing expectations too high on antenatal treatment in general and the systematic notification of pregnancy in particular.

Professor Donald writes from the standpoint of the accomplished gynaecological surgeon and obstetrician of wide experience, but assuredly his observations, so logically presented, will appeal very forcibly to the great bulk of the profession in general practice, many of whom have served a term as resident medical officer in a maternity hospital—to their lasting profit.

The futility of notification, with its inevitable compilation of statistics, is clearly exposed in his paper; yet it is not surprising to find this method publicly supported by some writers on the subject. Notification is the panacea of the hour, which at a stroke diverts this grave question into the capacious maw of the public health service—for example, the Huddersfield scheme.

The purely scientific practice of the profession is becoming more and more subordinated to the ever-growing burden of statistics and records, wrung from its members. Really we can picture the consulting-room of to-morrow as a compartment lined by a card index system, with a concealed emplacement beneath for those instruments of precision with which a medical man was wont to practise his craft, to be produced only after some apologies to the ticketed specimen who ventures into his sanctum.

Concerning the fundamental needs of the pregnant woman, Professor Donald insists on securing "freedom from occupations which are unhealthy or too arduous." In the manufacturing towns of the North, with their thousands of married women textile workers, do the existing conditions of labour conform to this ideal? We must unhesitatingly affirm that they do not. The unwholesome atmosphere of the cotton mill, with its long, dim hours of toil, the distracting turmoil of noise, is not a fit environment for the young expectant mother.

But modern matrimony has strayed far from the tenets of the Prayer Book. It was ordained for the procreation of children; but too often, in industrial centres, the child is a mere embarrassment in the search for the maximum weekly wage. Further, though hardly within the scope of this letter, I think it will be allowed that the appalling infantile mortality of the North of England is due in great part to the employment of young married women in factories and workshops. Lastly, in the course of some admirable practical suggestions, Professor Donald urges the subsidization of existing maternity hospitals and the creation of similar institutions in the smaller towns and country areas.

His reasoned plea for their establishment will carry conviction, I believe, to all conversant with the extraordinary varieties of environment under which the art of obstetrics has on occasion to be practised in the home.—I am, etc.,

GERALD RALPHS, M.B., F.R.C.S.E.

Dukinfield, July 11th.

IN DIRTY DOGDOM.

SIR,—I hope that your timely note on this subject will be followed up by correspondence and lead to some action. Every one will agree that the number of dogs in town streets is far in excess of requirement. Doctors who visit the poor are well aware that dogs are kept by persons who have no proper accommodation for them, and even by those who are too poor to provide wholesome food for their children. A guinea tax on dogs would reduce their number by one half, much to the satisfaction of motorists and all drivers of vehicles, the safety and comfort of cyclists, and the gratification of sanitarians and all who care for the cleanliness of our streets.—I am, etc.,

Nottingham, July 15th. JOS. S. BOLTON, M.D.

THE SOLDIER'S HEART.

SIR,—Mr. J. G. Turner is still under the impression that my exclusion of bacteria from the causation of "the soldier's heart" is "ill founded." It may be difficult to convert him, but as presumably he has an open mind, and more especially as, further on in his letter, he seems trembling in the balance and only half-heartedly playing the part of the devil's advocate, it may be worth another attempt to turn him away from his errors.

Mr. Turner takes exception to the generic term "sepsis" as merely "an acknowledgement of our ignorance of the bacteria involved," and we find him dropping laboratory methods and telling us that "clinical experience is daily opening our eyes to the number and variety of diseases which can be traced to dental (or nasopharyngeal) septic infection." It is high time that amateur bacteriologists learnt the postulates of Koch and stuck to them. It is not sufficient to ask me to prove that these septic organisms have no part in the causation of "the soldier's heart"; it is for Mr. Turner and his friends to prove what the different members of the septic flora of the mouth do, and thus get rid of their acknowledged ignorance. I have shown that the cause of "the soldier's heart" is hyperthyroidism, *quod erat demonstrandum*, and, acting on the truly scientific spirit of Sir William Hamilton's law of parsimony, I am not going to admit any other cause which is not proven.

No doubt on the question of oral sepsis Mr. Turner is quite at home, but when he wanders further afield he gets into a hopeless morass. My statement to the effect that you can have septic organisms in the mouth and even a stinking breath without the individual suffering therefrom elicits from him the following comment: "This seems to mean that he finds a healthy mouth and patient in presence of a stinking breath, and thereby he seems to me to discredit his claim to give an opinion on dental sepsis." This is a queer medley for a scientific man to make. I wish him clearly to understand that I mean exactly what I say, and my clear, definite, unsophisticated words will not bear the interpretation which he has put on them. What right has he to mix up "a healthy mouth and patient" without even a comma to separate them? Is the mouth not on the surface of the patient? There may be any number of organisms on the surface, and so long as they remain there they are harmless to the patient. The micro-organisms under the surgeon's nails are harmless there, but when they are introduced into the patient's body there may be a different tale to tell. So long as the patient has no abrasion in his mouth he may even suck the dentist's finger, but unfortunately dentists are very prone to make abrasions. A pneumococcus is fairly common in the mouth, and perfectly harmless in that position. The same can be said for many septic organisms. It is now very many years since I first advocated that no serious operation on the mouth should be undertaken merely after disinfection, but before the first line of defence was broken down a further protective barrier should be set up in the patient by the use of serums, vaccines, and calcium salts. Those surgeons who have followed my advice have been rewarded with a lessened mortality.

Mr. Turner further says he has "never yet found a mouth free from clinical signs of inflammation in presence of stinking breath due to dental sepsis, and I suggest that Sir James Barr, in common with many others, dentists included, does not realize the less gross signs of inflammation in the mouth." There is here an assumption of superiority—a superiority probably correctly assumed—on

the part of Mr. Turner. He then infers that, "If this be so, one may well question his statement that 'there are many cases of the soldier's heart without any evidence of sepsis or septic absorption, and the symptoms continue after the dentist has worked his own sweet will.'" One might reasonably expect from a scientific man that he would exercise a little care in the establishment of his premisses before he jumped at a conclusion, but Mr. Turner quietly assumes, without any evidence, that my powers of observation are faulty, and that if I fail in the least of these things I am guilty of all. I would strongly advise Mr. Turner to curb his scientific imagination. A plain minded man like myself might naturally conclude that the inflammatory zone, which Mr. Turner never fails to find, would act as a barrier between the septic organisms in the mouth and the general systemic circulation, and that under such conditions it was merely a question, as a physiologist would say, of adsorption rather than absorption. In some of the worst cases of oral sepsis, associated with pernicious anaemia, no trace of inflammatory reaction can be found. In the eradication of oral sepsis I understand that the modern dentist, in place of breaking down the inflammatory and protective wall with sharp scraping instruments, now further strengthens it by the use of the electric current, chloride of zinc, etc.

"I may be allowed to suggest that even if hyperthyroidism be the immediate cause, this in turn may be due to bacterial causes, possibly originating in dental sepsis." What a wonderful advance we have got here! actually acknowledging the possibility of "the soldier's heart" being due to hyperthyroidism. None other of my antagonists have got so far. I always admire the honest man as the rarest work of God, and try to strive after such an ideal. I am old enough to know that I may make mistakes, I hope intelligent enough to know when I have done so, and I trust honest enough to acknowledge them. The causes of hyperthyroidism open up a grand vista for the scientific imagination, but, so far as any real progress in this direction has yet been made, we are still much in the same position as the Scotsman's cow which had very little to feed upon, but she had a grand view. Personally I have had the temerity, on more than one occasion, to mention the associated conditions, precursors, or causes of hyperthyroidism, but I shall not venture on the solution of the problem until I am able to bring it within Newton's dictum. Mr. Turner might start with the causes which lead to the evolution of the multiple functions of the thyroid gland and the necessity of their presence for the maintenance of the highest organizations. He may then possibly find that for such evolution bacterial toxins are unnecessary. The cretin is very prone to succumb to tuberculosis, but it does not necessarily follow that hyperthyroidism leads to immunity against that disease. If, in all seriousness, I asked Mr. Turner, What is gravity? I would not expect him to indulge in a rhodomontade about attraction of matter, but to honestly say that he did not know.

Mr. Turner is extremely unfortunate in his suggestion that "myocarditis, possibly dependent on the same source, may also be suggested as a possible cause." I presume, from the context, that he means here a possible cause of hyperthyroidism which in turn leads to "the soldier's heart." He has now evidently got beyond his last, *supra crepidam*, as although it is within the bounds of possibility that a patient affected with myocarditis may eventually show the signs of hyperthyroidism—from treatment or otherwise, yet the converse cannot be true, as the secretion of the thyroid gland is a protective agent against arterial degeneration. Moreover, the short clear sounds, the rapid muscular contraction, and the brisk propagation of the pulse wave in cases of "the soldier's heart" show that there is no myocarditis.

It requires no superhuman genius to infer that "the excessive fatigue to which the soldier is liable obviously opens the way to more serious results from an infection which the patient has hitherto carried about with him with apparent immunity." What necessary connexion is there between the fatigue, the infection, and "the soldier's heart," and why do not the symptoms of "the soldier's heart" disappear with the removal of the fatigue and the infection? Mr. Turner does not add much to my education when he says that "perhaps some degree of 'soldier's heart' is more common among civilians than Sir James knows," and he evinces a certain amount of ignorance on his own part, as I have been among those who have long pointed out minor degrees of hyperthyroidism which could scarcely be designated Graves's disease. I am sorry to occupy so much space, and in conclusion wish to draw the attention of Mr. Turner to the teaching of Kelvin, "that when you can measure what you are speaking about, and express it in numbers, you know something about it; but when you cannot measure it, when you cannot express it in numbers, your knowledge is of meagre and unsatisfactory kind; it may be the beginning of knowledge, but you have scarcely in your thoughts advanced to the stage of science."—I am, etc.,

Liverpool, July 8th. JAMES BARR.

THE DISENFRANCHISEMENT OF FELLOWS OF THE ROYAL COLLEGE OF SURGEONS OF ENGLAND RESIDENT ABROAD.

SIR,—I venture to write a few lines to endorse the protest of Mr. Fitzwilliams in your issue of May 20th against the practical disenfranchisement of all the Fellows of the College resident in India and the colonies through the voting papers for the election of members of Council being systematically sent out too late to enable those abroad to record their votes in time. I find from a recent Indian Army List that there are no fewer than forty-five Fellows of the College in the Indian Medical Service alone, most of whom have a very large surgical experience, but under the present system they lose their votes during the greater part of their active life, as I have done for the past twenty-three years. Surely now that unity of all parts of the British Empire is being so wonderfully demonstrated to the whole world, it is high time that the College sent out its voting papers at least three months before the election in order to allow all the Fellows to vote. I think few, even of the most conservative, would venture to assert that the Council would be any the worse for enfranchising those Fellows who at least gain a wide outlook while serving the empire in voluntary exile from the mother country.—I am, etc.,

LEONARD ROGERS, F.R.C.S.,
Calcutta, June 14th. Indian Medical Service.

Public Health AND POOR LAW MEDICAL SERVICES.

POOR LAW MEDICAL OFFICERS' ASSOCIATION OF ENGLAND AND WALES.

DR. NAPPER, in the absence of the President on military duty, took the chair at the annual general meeting of the Poor Law Medical Officers' Association on July 7th. The officers and members of council who had held office during the last year were re-elected.

The following resolution was adopted unanimously:

> That this meeting of the Poor Law medical officers of England and Wales strongly condemns the recent action of the Government in reducing the fees for the notification of infectious diseases; that, considering the loyalty of the profession, and the great assistance rendered by it during the war, the said reduction is excessively mean, and it is earnestly hoped that as soon as the war is over, those bodies representing the medical profession will take all steps in their power to obtain redress for such inequitable treatment.

THE twenty-fifth annual report of the Nurses' Co-operation (22, Langham Street, Portland Place, W.) states that there are 472 fully-trained nurses on the general staff, 34 asylum-trained nurses for mental patients, and 23 nurses eligible for election, working on probation for six months. Each nurse receives the whole of the fees earned by her, subject to a reduction of 7½ per cent. for working expenses; the reduction in the case of those who joined before the end of 1908 is only 5 per cent. Since the outbreak of war many nurses have been engaged by the War Office and Admiralty and have been sent abroad. The Co-operation provides a policy of insurance against accident, and another against sickness and disease, under which for a small annual contribution, supplemented from the funds of the Co-operation, a nurse becomes entitled to a weekly allowance whilst temporarily incapacitated. The Army and Navy Male Nurses Co-operation (11a, Welbeck Street, London, W.), which before the war had become self-supporting, has been very adversely affected, because the men have been recalled to military duty. It appeals for donations to keep the institution going.

Obituary.

ELIAS METCHNIKOFF.

THE whole scientific world will mourn the death of Elias Metchnikoff, whose researches may truly be said to have changed the face of pathology. He had been in failing health for some months, and passed away at the Pasteur Institute in Paris on July 15th.

Elias Mecznokow, to give him his Russian name, was born on May 16th, 1845, in a village of the government of Kharkoff (Little Russia). His father was an officer of the Imperial Guard, who retired with the rank of Major-General; his mother was a Jewess, from whom he doubtless inherited his love of music. His elder brother was the provincial functionary whose death in the prime of life forms the subject of Tolstoi's pathetic story, *The Death of Ivan Ilyitch*. From an early age Metchnikoff showed a strong bent towards the study of natural science. He was educated at the gymnasium and University of Kharkoff. In 1864 he went to Heligoland to work at marine biology. In 1865 he proceeded to Germany, where he studied zoology at Giessen, Göttingen, and Munich under Leuckart, Henle, and von Siebold. After a further period of study at Naples he returned to Russia in 1867, and was "docent" in zoology first at Odessa, and afterwards at Petrograd. In 1870 he was appointed professor of zoology and comparative anatomy at Odessa. In the pursuit of his zoological researches he visited Madeira, Teneriffe, and the Kalmuck Steppes. In 1882, when the political atmosphere of the University became disturbed after the assassination of Alexander II, he resigned his professorship and became director of the municipal bacteriological laboratory. Afterwards he left Russia and spent some time at Messina. In 1883 he went to Paris on the invitation of Pasteur, who gave him a laboratory in the new institute, of which he afterwards became subdirector. There Metchnikoff continued to work almost to the end; since the outbreak of the war, even when struggling against the illness which proved fatal, he made investigations on the health of armies.

In 1882 he published a memoir on intracellular digestion in which he enunciated the doctrine of phagocytosis. His observations of wandering cells in certain water-fleas led him to recognize the part played in the human economy by the white blood corpuscles. Briefly stated, the fundamental concept of the doctrine is that when a morbid process sets up disturbance in the body, or when there is an invasion by microbes, leucocytes are drawn to the point attacked and engulf the intruders or destroy them by pressure. In his *Comparative Pathology of Inflammation*, published in 1892, he showed the part played by phagocytes in resistance to the effects of disease and injury. The essence of the doctrine as formulated by himself is contained in an address delivered by him at the Pasteur Institute on December 29th, 1890, where he says:

> The broad fact that the invasion of the organism by microbes most often induces, on the one hand, an inflammatory reaction with its associated emigration of leucocytes, and that, on the other hand, the phagocytes are capable of including and destroying the invaders, leads us to admit that the afflux of phagocytes to the invaded region and their bactericidal properties are mechanisms which serve to ward off bacterial attack and to maintain the integrity of the organism.

In 1901 appeared his great work, *L'Immunité dans les maladies infectieuses*, an English translation of which was published in 1905. In that book Metchnikoff propounded the view, founded on long and laborious experimental work, that the mechanism of immunity is to be found in the action of phagocytes on the poisons of pathogenic bacteria converting toxins into antitoxins. We feel gratification in recalling the fact that Metchnikoff's teaching on phagocytosis and immunity was first formally presented to the medical profession of this country in a lecture translated by Dr. J. G. Adami, which was published in the BRITISH MEDICAL JOURNAL of January 31st, 1891.

Metchnikoff's name was best known to the public by his views on the prevention of old age. His researches on the bacterial flora of the alimentary canal led him to the conclusion that ill health is largely the result of the absorption of the products of decomposition set up by microbes in the colon, and that these poisons are the chief agents in the production of the changes characteristic of old age. In an essay, published in 1899 in the *Archives Russes de la Pathologie*, he said that physiological as well as pathological atrophy is the result of the perpetual struggle between the normal cells of the tissues on the one hand, and the macrophages on the other. Senile decay consists essentially in atrophy of the "noble," that is to say, specific, elements of the tissues, and the replacement of them by hypertrophied connective tissue. This leads to arterio-sclerosis, with disturbances of nutrition, difficulty in the purification of the blood, and weakening of the intelligence; these changes help to bring about unduly early death. For the prevention of intestinal putrefaction he advised the use of milk soured by an association of lactic bacteria, or the ingestion of pure cultures of the *B. bulgaricus*, together with sugar of milk or saccharose. A full exposition of his teaching on these subjects may be found in his *Etudes sur la Nature Humaine: Essai de Philosophie Optimiste*, published in 1903, an English translation of which appeared in the same year. Another work in which his doctrines on the prolongation of life are set forth in popular style is *Essais Optimistes*, published in 1907. By one of those ironies of fate, which one might almost think are contrived by a Mephistopheles in derision of the strivings of man after the betterment of his unhappy lot, Metchnikoff, who taught that by following his teaching human life should be prolonged beyond a century, and that only exceptionally should its duration fall below that limit, died at the age of 71.

Metchnikoff gave much attention to the prevention of syphilis; in 1905 and 1906 he, together with Roux, presented to the Académie de Médecine communications embodying the results of experimental work on the inoculation of the virus in monkeys and the possibility of its transmission from these animals to man. In the Harben Lecture, delivered at the Royal Institute of Public Health in 1911, he stated that even if a vaccine against syphilis were discovered it could only be used exceptionally, as the attenuated virus might cause distressing complications. In 1901 the Manchester Literary and Philosophical Society awarded him its gold medal. On that occasion he delivered a lecture on the bacterial flora of the intestine, which was published in the BRITISH MEDICAL JOURNAL of April 22nd, 1901. In the same year he read a paper before the Académie de Médecine on the connexion between nematodes and appendicitis, in which he uttered a word of warning against the use of raw vegetables and fruit and uncooked meat.

Metchnikoff received many honours in recognition of his work. The University of Cambridge conferred on him the honorary degree of D.Sc. He was a Member of the Institute of France, of the Petrograd Academy of Science, and of many other learned bodies. He was also a foreign member of the Royal Society, which in 1906 bestowed on him the Copley Medal for his work in zoology and pathology. In 1908 he divided with Ehrlich the Nobel medal and prize in medicine.

Metchnikoff was a man of large mind stored with the most varied knowledge. His wide training in zoology and embryology equipped him in an unusual manner for the study of pathology. But he was much more than a scientific investigator; his interests extended to everything human. His books have a peculiar charm owing to the illustrations from literature with which his vast reading enabled him to light up his pages. His hope for the future is expressed in the closing words of *The Nature of Man*: "If there can be formed an ideal able to unite men in a kind of religion of the future, this ideal must be founded on scientific principles. And if it be true, as has been asserted so often, that man can live by faith alone, the faith must be in the power of science."

Metchnikoff was twice married. His second wife, who had been his pupil, gave him valuable assistance in his work.

Colonel J. G. ADAMI, F.R.S., writes:

As (I believe) the first British student in pathology to place himself under Metchnikoff in his new laboratory at the Institut Pasteur, I have a vivid memory of the fight to gain medical recognition for his views. And certainly it was not by any means, as has been suggested, only the "older and more ignorant members" of our profession who fought against accepting his abundant and brilliant observations and his deductions therefrom. To-day it is timely to recall that, just as Koch and the German bacteriologists, as a part of the pan-Germanic programme,

consistently endeavoured to minimize Pasteur's great work, so when Metchnikoff associated himself with the Institut Pasteur, German bacteriologists as a body damned his doctrine with faint praise where they did not actively oppose it. There will be some who can recall the memorable debate upon immunity at the International Congress of Hygiene in London in the summer of 1891, which threw this opposition into high relief. On the one side were ranged Roux and Metchnikoff —Arloing, the other French pathologist, took an independent line—on the other, Buchner, Hueppe, Emmerich, and Ehrlich, one and all supporting the humoral doctrine. Obviously they were playing a losing game. If, as they claimed, bacteria were destroyed by the bactericidal substances present in the fluids of the body, those substances must have been secreted or discharged there as the results of cell activities or cell destruction, and by that period Metchnikoff had expanded his doctrine to admit both intracellular and extracellular activities on the part of his phagocytes. But the team play was striking; the humoral was the German theory, and was to be supported through thick and thin; to seek out the truth and to ensue it was of secondary importance. Saying this, it must, I think, be admitted that the great Russian, while admitting the extracellular activities of endothelia and wandering cells, did so somewhat grudgingly. He never studied the functions of the lymphocytes (which are not phagocytic in the strict sense) with the same enthusiasm as he did that of the polymorphonuclears (which are). But it was he who established the part played by phagocytosis in the arrest of infectious disease. That was his life's work.

So assured was he of the importance of the process that it was both natural and pardonable that he should see in it the be-all and end-all of inflammation, and should conclude, in his most fascinating volume upon this latter subject, that inflammation is but phagocytosis writ large. It is not a little interesting that from Burdon-Sanderson's article in *Quain's Dictionary* in the Eighties down to Sir Almroth Wright in this year of grace British pathologists have taken the broader biological view, regarding inflammation as the reaction to injury, and holding that the organism employs every means at her disposal, and not one alone, to neutralize or remove the irritant.

In Metchnikoff was that rare alliance of the capacity for taking infinite pains with a most active scientific imagination, so active, in fact, that at times it carried him beyond his goal. But, saying this, we must acknowledge with whole-hearted appreciation that through him Russia, with the friendly support of France, has given us a new and greater science of medicine. He rather than Virchow has been the creator of a live cellular pathology, a pathology based upon the reactions manifested by the cell under well-determined conditions of experiment, instead of upon the appearances of the cell, which may have suffered numerous unknown insults, as found in the *post-mortem* room. This is not the same as saying that we do not owe a heavy debt to Virchow, only that the method of Metchnikoff is of the higher scientific value, and therefore likely to lead further and accomplish more.

Universities and Colleges.

UNIVERSITY OF LONDON.

MEETING OF THE SENATE.

A MEETING of the Senate was held on June 21st. Sir Alfred Pearce Gould, K.C.V.O., was re-elected Vice-Chancellor.

Examiners.—The following were appointed to act as examiners: *Anatomy:* F. G. Parsons and R. W. Reid. *Pharmacology:* F. Ransom and R. B. Wild. *Physiology:* Miss W. C. Cullis and D. N. Paton. (The second name in each case is that of the external examiner.)

Brown Animal Sanatory Institution.—The annual report of the acting superintendent, Dr. Mellanby, for 1915 stated that 4,680 animals had been brought to the institution, of which 50 were in-patients at the hospitals; the animals under treatment included 3,058 dogs, 1,191 cats, and 255 horses. Five lectures on recent work on alimentary toxaemias had been delivered in the Royal College of Surgeons in December by the acting superintendent in accordance with the will of the late Mr. Brown. The report also recorded the investigations which had been carried out in the laboratory.

University Medal.—The university medal at the M.B., B.S. examination, May, 1916, has been awarded to Stanley Ritson, B.Sc., of King's College Hospital.

UNIVERSITY COLLEGE.

The following awards have been made in the Faculty of Medical Sciences:—*Bucknill Scholarship:* J. P. Padshah; *Epsom Scholarship:* D. C. Corry; *Medical Entrance Exhibitions:* H. L. Heimann, A. B. Saunders.

The Provost reports that the number of students during the last academic year was 1,132 (including 51 refugees), as compared with an average of 2,200. The number of women students was 596, and of men students 536, but of the men only 222 have been in attendance throughout the session; of these, 80 were under military age, and 19 specially reserved to continue their work. The roll of members of the College serving contained 1,476 names. The number who had lost their lives was 73. The chief domestic event of the session was the occupation of the new chemistry laboratories. They are not yet completely equipped, and for this purpose a sum of £20,000 is now required, towards which Sir Ralph Forster has promised £5,000.

UNIVERSITY OF MANCHESTER.

THE diploma of public health has been awarded to the following: E. R. Cooper, H. N. Crossley, S. W. MacLean, W. H. Tattersall.

UNIVERSITY OF EDINBURGH.

THE following degrees were conferred at the graduation ceremonial on July 11th:

M.D.—A. S. Boyd, R. Govan, W. D. S. Johnston, J. Lindsay, G. J. Luyt, R. M. Mackay, A. W. Mather, ‡A. N. Robertson, §Chung Ching Wang, §Chung Yik Wong, §W. Q. Wood.
D.Sc.—Dr. J. W. Dawson.
M.B., CH.M.—G. Holliday.
M.B., CH.B.—C. B. C. Anderson, G. H. Barry, †J. Bennet, R. D. Cameron, J. E. Chow, Ando Huan Chu, D. Colombos, W. J. F. Craig, T. Crisp, A. L. V. Davin, D. G. Duff, *J. J. B. Edmond, A. M'L. Ferrie, M. Foster, A. K. Gibson, †W. N. Greer, F. J. Hauptfleisch, C. S. van Heerden, N. K. Henderson, Wilhelmina W. Hendry, S. N. Kaul, Marjorie I. S. M'Gregor, I. MacKenzie, J. A. Mackenzie, Isobel M. MacLullich, J. O Marais, J. de V. Meiring, R. W. H. Miller, E. A. Mills, C. Milne, J. Milne, H. S. Moore, *J. L. Owen, A. M'M. Paterson, C. P. Peuberthy, A. Prentice, J. C. Preston, W. Richards, *B. J. Ryrie, Eng Siang Seah, E. O. A. Singer, J. M. Smellie, E. D. Söderström, M. Stewart, R. B. Stewart, D. G. Stoute, M. D. Thakore, D. R. Thapar, W. G. Thomson, J. I. de Villiers, W. Waddell, R. R. S. Weatherson, Gladys R. M. V. Williamson, R. M. Wishart, C. W. Ng Yow.

The following scholarships, prizes, etc., have been awarded: Ettles Scholarship: B. J. Ryrie. Beaney Prize in Anatomy and Surgery: A. V. Dill. Mouat Scholarship in the Practice of Physic: A. J. Caird. Conan Doyle Prize: C. T. I. Clarke. Buchanan Scholarship in Gynaecology: B. J. Ryrie. James Scott Scholarship in Midwifery: J. Bennet. Dorothy Gilfillan Memorial Prize: Gladys Ward. Pattison Prize in Clinical Surgery: J. C. Burns. Cunningham Memorial Medal and Prize in Anatomy: M. Goldberg. Whiteside Bruce Bursary: J. R. M'Donald. Crum Brown Medal in Chemistry: G. F. Davidson.

* First class honours. † Second class honours.
‡ Gold medal for thesis. § Highly commended for thesis.

QUEEN'S UNIVERSITY OF BELFAST.

THE following candidates have been approved at the examinations indicated:

M.B., B.CH., AND B.A.O. EXAMINATION.—W. F. Algeo, †J. Boyd, W. Bryars, A. G. P. Campbell, G. Chesney, A. C. Dickey, *Grace M. English, †F. Ewart, H. E. Hall, J. A. Harbison, Arabella C. Kirker, N. McCullough, *J. P. McGinley, †B. W. McKinney, M. McMenamin, F. McSorley, J. J. Marner, T. J. Marner, †D. Mitchell, Elizabeth M. Moore, *Margaret S. Purce, C. A. W. Ramsay, R. J. Rea, W. Saunderson, T. R. S. Thompson, N. C. L. B. Tweedie, J. H. Vance.
* First class. † Second class.
M.D.—W. W. D. Thomson (gold medal), J. M. Warnock.
D.P.H.—Dr. A. E. Knight, Dr. W. J. MacKeown, Dr. C. J. Milligan.

ROYAL COLLEGE OF SURGEONS OF ENGLAND.

A MEETING of the Council was held on July 13th, when Sir Watson Cheyne, Bt., President, was in the chair.

The Improper Use of Medical Certificates.

The attention of the Council having been called to a complaint regarding the manner in which medical certificates are sometimes obtained by men who have failed to join, or have deserted from, His Majesty's transports, it was decided to warn Fellows and Members of the College of the need for care in granting medical certificates, and the penalties to which they may become liable for granting them improperly. It is alleged that these certificates can be obtained for the small fee of 6d. or 1s., and that they are often given without an examination of the patient, and merely on the man's statement as to the nature of his alleged illness.

Removal of a Member.

The name of a member was removed, he having been already removed from the *Medical Register.*

Conjoint Board of Scientific Societies.

The President and Sir John Bland-Sutton were appointed representatives of the College on the above Board.

Election of President and Vice-Presidents.

Sir Watson Cheyne, Bt., was re-elected President for the ensuing year, and Mr. Harrison Cripps and Mr. Charters Symonds Vice-Presidents.

Executive Committee of the Imperial Cancer Research Fund.

Mr. D'Arcy Power was elected a member of the above committee.

Issue of Diplomas.

Diplomas in Public Health were granted jointly with the Royal College of Physicians to three candidates found qualified at the recent examination.

CONJOINT BOARD IN SCOTLAND.

THE following candidates have been approved at the examination indicated:

FINAL EXAMINATION.—T. D. Renwick, S. D. Vania, F. B. Macaskie, M. A. White, A. L. Giblin, Elfrida H. B. Coghill, J. Ross, J. E. Kitchen, Ethel M. Dukes.

The Services.

EXCHANGES.

LIEUTENANT R.A.M.C. (temporary), attached to Casualty Clearing Station (B.E.F.), desires to exchange with M.O. attached to Home Station unit.—Address No. 2800, BRITISH MEDICAL JOURNAL Office, 429, Strand, W.C.

Medical Officer, Captain Field Ambulance (T.F.), B.E.F., desires exchange with officer same rank, Hospital, England.—Address No. 2799, BRITISH MEDICAL JOURNAL Office, 429, Strand, W.C.

Medical News.

DR. E. N. BURNETT has been appointed a Justice of the Peace for Newcastle.

THE house of the Royal Society of Medicine will be closed for cleaning and library stock-taking during the whole of August.

DURING the three months April–June, 174 cases of cerebro-spinal meningitis were notified in London, with 85 deaths, as compared with 294 cases and 167 deaths during the corresponding quarter of last year.

THE Liverpool School of Tropical Medicine has informed the Belgian Ambassador in London that Belgian doctors at present in this country desirous of taking out a course of instruction in tropical medicine will be admitted free of charge at the opening of the new term on September 11th.

THE correspondent of the *Times* with the Russian centre army, in a letter dated July 11th, states that "the ambulance, first aid, and field hospital work of the Russians is beyond all praise. The Army Medical Service, not less than the Red Cross and private organizations, have done splendid work."

THE seventeenth annual general meeting of the National Association for the Prevention of Consumption and other Forms of Tuberculosis will be held at 20, Hanover Square, on Wednesday next, at 4 p.m. A discussion on war and tuberculosis will be opened by Sir William Osler and Mr. H. J. Tonnant, M.P.

IT is reported that on July 15th, when about to pay a professional visit to a farmer residing in a remote part of Carmarthenshire, Dr. D. T. Glyn Jones, of Llansawel, near Llandilo, was shot by the farmer's son, and died without recovering consciousness. The inquest was opened on July 18th and adjourned. Dr. Jones, who was 47 years of age, received his medical education at the Middlesex Hospital, and took the diploma of L.S.A. in 1901.

A REPORT on the plague in Egypt during 1915 has recently been issued by the Department of Public Health. The total number of known cases was 235; in 1914 it was 219, and in 1913 it was 654. The deaths numbered 120, 111, and 304 in the respective years; from one-third to two-fifths of them occurred in hospital. Last year about three-fourths of the cases admitted to hospital occurred during the four months April–July. In 1914 the maximum was a little later, in 1913 a little earlier.

THE Mary Murdoch Memorial Loan Fund has been raised to perpetuate the memory of Dr. Mary Murdoch, of Hull, her high professional standard and the inspiration and encouragement she was to her colleagues and friends. The committee which has been formed to administer the fund is prepared to grant loans of £100 or less, free of interest, so as to give women doctors some financial help at a time when they may specially need it. Such special need might be during their early years of establishment in practice, to enable them to study some special subject or purchase some particular apparatus, etc. This fund will be open to all medical women, but preference will be given to those who have been trained at the London School of Medicine for Women, which was Dr. Murdoch's own school. All applications will be regarded as confidential and should be made to the honorary secretary and treasurer, the Hon. Mrs. Franklin, 50, Porchester Terrace, London, W.

Letters, Notes, and Answers.

THE telegraphic addresses of the BRITISH MEDICAL ASSOCIATION and JOURNAL are: (1) EDITOR of the BRITISH MEDICAL JOURNAL, *Aitiology Westrand, London*; telephone, 2631. Gerrard. (2) FINANCIAL SECRETARY AND BUSINESS MANAGER (Advertisements, etc.), *Articulate Westrand, London*; telephone, 2630, Gerrard. (3) MEDICAL SECRETARY, *Medisecra Westrand, London*; telephone, 2634, Gerrard. The address of the Irish office of the British Medical Association is 16, South Frederick Street, Dublin.

QUERIES.

INCOME TAX.

VIATOR, in making his "Income tax return, Schedule D, for 1914–15" (*sic*) put down his net income, but attached a statement giving particulars of the gross amount, and the expenses deducted therefrom. He was charged income tax on the exact amount of the gross income, and on that basis paid tax in January last. He has now received a further application for tax on the same basis, and has been told by the surveyor that the assessment must stand, as no appeal was made last year.

*** Although our correspondent's letter quotes the year in in question as "1914–15," we assume that he refers to the year 1915–16, for which the tax is payable in two instalments, one in January, 1916, and one in July, 1916. The 1914–15 tax would not be payable in two sums. It is presumed that due notice of the assessment was given to "Viator" in the autumn or late summer of 1915, in which case he should have given notice of objection to the assessment within twenty-one days (Taxes Management Act, 1880, Sec. 57 (3)). As this was not done he has now no right of claiming an adjustment of the assessment *by process of appeal*, but if his practice has suffered owing to the war he can still lodge an application under Sec. 13 of the Finance Act, 1914 (Session 2), for an adjustment of the assessment to the amount of the profits of the year 1915–16, or of the average profits for the years 1913, 1914, 1915. By such an "application" "Viator" would effectively get round the legal difficulty that he is statute-barred from "appealing." If he is unable to come to an equitable arrangement with the surveyor of taxes on these lines, he might find it advisable to ask the Board of Inland Revenue to give the matter special consideration, on the ground that unreasonable hardship would otherwise be inflicted. We may perhaps add that the second instalment of the 1915–16 tax is governed by the original assessment for that year—Finance (No. 2) Act, 1915, Sec. 20 (a). An alternative method, not depending on the condition that the practice has suffered owing to the war, would be for "Viator" to prove that his "actual income from all sources is less by more than 10 per cent. than the income on which he has been assessed or charged," in which case a portion—and if the deficiency amounted to 20 per cent., the whole—of the additional tax arising from the increase in the rate of duty would be returnable, or might perhaps be discharged without payment of the amount being required—Finance (No. 2) Act, 1915, Sec. 20 (2).

LETTERS, NOTES, ETC.

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PARAFFIN FOR LOUSINESS.

DR. HENRY WALDO (Clifton, Bristol) writes: In reply to "Naval Medical Officer's" letter (JOURNAL, June 17th, p. 872), who thinks that paraffin might prove decidedly dangerous owing to its inflammability, may I say that the ordinary medicinal paraffins are non-inflammable? But after Allan Jamieson's warning that workers in these substances are more liable to cancer than other people, it would be at least injudicious to use them externally, and still more so to give them internally, as has been much the fashion for constipation. Sprinkling powdered sulphur over the under garments and well rubbing it into the seams will be found a safe and efficient treatment for lousiness.

SCALE OF CHARGES FOR ADVERTISEMENTS IN THE BRITISH MEDICAL JOURNAL.

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Seven lines and under	0	5	0
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